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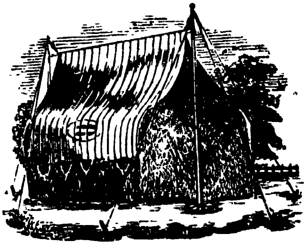

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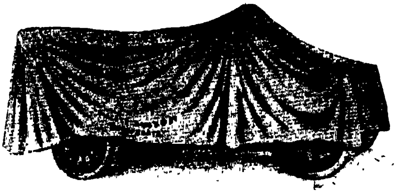

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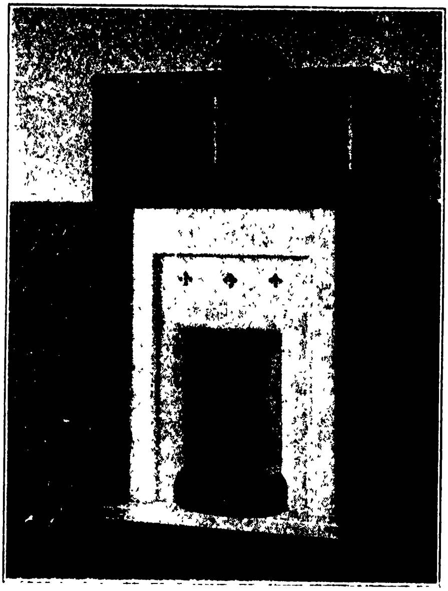

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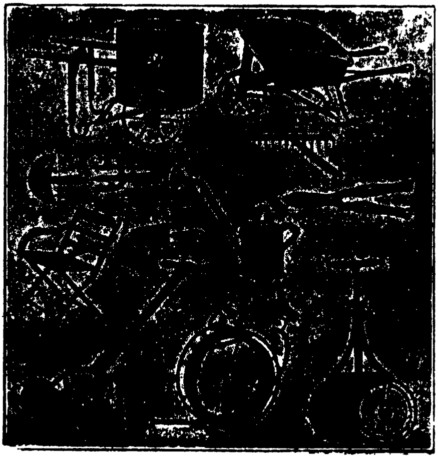

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" He that goes about to forward agricultural improvement must begin by finding out the true reason of what is called routine, or ' the custom of the country.' It sometimes happens that these reasons are only accidental, and then you may dismiss them fearlessly ; but often it turns out that every-day practice rests on a solid foundation of facts ; and then if you make an onslaught on local prejudices, they will be sure to beat you."

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" If practice which sets up to do without theory is contemptible, theory without practice is foolhardy and perfectly useless."—*From the Rural Economy of England, Scotland and Ireland,* by LEONCE DE LAVERGNE.

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JOURNAL

OF THE

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.

Original Articles and Reports.

I.—THE IMPORTANCE OF THE SUGAR BEET.

By S. Leonard Bastin, 18, *Arnewood Road*, *Bournemouth*.

THE IMPORTANCE OF THE SUGAR BEET CROP.

In a paper published in the Society's Journal for 1919, the writer endeavoured to arouse a wider interest in the question of the home production of beet sugar. Since then, this long-neglected industry has been the subject of an increasing amount of attention. Real progress has been made in awakening the British farmer to the importance of a crop which should assume a predominant position in the agriculture of this country. In spite of all that has been done there is still a lamentable lack of understanding amongst farmers on many points connected with the growing, harvesting, and disposal of sugar beet. There is a widespread idea that by growing sugar beet instead of mangolds or swedes, the farmer will impoverish his land and reduce his stock to such an extent that he will indirectly lose more than he would gain from the contract price given by the factory for his crop. This is a wholly mistaken impression, as it is the purpose of the present paper to prove. Actually, if the farmer were to sell his roots at the bare cost of production he would not lose on a sugar beet crop owing to the valuable by-products which are associated with the growing of sugar beet.

WHAT IS SUGAR BEET ?

It may be of interest to give a brief outline of the nature of the sugar beet. The plant is a root crop of the same family as the mangold. When grown properly it has a long tapering root resembling a parsnip in shape and colour. The root is much larger and broader at the top, and its weight, apart from the crown and leaves, will be, on the average, from 1½ to 2 lbs. The foliage of the sugar beet is large and of a deep green, and the root, unlike that of the mangold, is almost entirely below the surface. The sugar beet is notable on account of the large number of rootlets and root hairs which it produces. These help the plant to absorb water and nutriment from the soil and have remarkable penetrative powers, thus allowing the air to permeate over a wide radius. Originally the sugar beetroot, or white mangold, contained only a low percentage of sugar which was rarely more than 6 per cent. At the present time, after years of selection and breeding, the plant produces and stores in the roots from 15 to 20 per cent. of its net-weight of sugar. The last named figure must be regarded as near to the limit of the proportion of sugar which can be obtained from the beetroot. Anything in excess of this is likely to affect the well-being of the plant as a whole. Roughly speaking, the most satisfactory results are secured when the percentage of sucrose, as the sugar is properly called, is about one-seventh of the bulk. All the commercial seed employed in sugar beet cultivation for the production of sugar is grown from " mother seed " which is carefully produced from year to year at stations making a speciality of this work. It has been proved that seeds grown the second year from the commercial sugar beet are likely to " throw back," and the roots grown from these are of very small value from the point of view of sugar production. The sugar in the beet is the product of light, air and water, and it is manufactured by the foliage and then stored in the roots. When the autumn comes, the leaves of the beet, having finished their work, turn a greenish yellow and begin to wither. The top or crown of the root (from below the lowest leaf or bud) is removed on the field because it contains only a very small percentage of sugar and much impure matter. This is of no value to the sugar manufacturer, and in fact, has a harmful effect on the processes.

THE ENGLISH CLIMATE AND SUGAR BEET.

It has been repeatedly advanced that the climate of England is not suitable for the culture of sugar beet. Such matters as temperature, rainfall, and sunshine, all have a considerable influence on the percentage of sugar in the roots. In the early stages of growth a moderate rainfall is desirable, seeing that a fair amount of moisture is required if the roots are to develop properly. After the principal growing season, hot dry weather aids in the development of a high percentage of sugar in the roots. Our island climate is not so stable as that of the Continent, where, for long, the culture of sugar beet has been so successfully carried on. Here we are not sure of the fine summer which, with much greater regularity, visits most parts of Europe. The years 1921 and 1922, however, proved that profitable sugar beet crops could be produced even during the wet and sunless summers with which we are so familiar. Comparison between the beet crops which were grown during the exceptionally dry but sunny season of 1921 and the correspondingly wet and sunless season of 1922 shewed that, in both years, the sugar content in the beet averaged more than 16 per cent. Of course, the Eastern Counties of England most nearly resemble in climatic conditions of the chief beet growing areas on the Continent. As a matter of fact, good crops of sugar beet have been raised in many parts of England south of the Humber and even much farther north. Where the climate is suitable, practically any kind of soil in which roots generally will flourish would be likely to meet the needs of the sugar beet. The best soils are deep loams well supplied with lime and organic matter. It is important that the soil should be free-working if the best results are to be obtained. Even with strong clays beet can be made to thrive with a liberal treatment of the soil. Here the chief objection is the increased labour in lifting a deep root, although a high sugar content is often obtained in such conditions. A very shallow soil is not to be recommended, for, in such cases, the beet takes a mangold shape and is likely to develop fang-like roots. Badly drained soil is almost certain to cause a large number of more or less deformed roots.

CULTIVATION.

Generally speaking the cultivation of sugar beet should be on similar lines to that followed in the case of mangolds. Deep working is very needful, and the preparation of the ground should take place as soon as possible after the harvest. When the cereal crop is cleared away the seeds of weeds germinate freely. Light cultivation with skim plough or cultivator not more than three inches deep encourages this weed growth, and in two or three weeks the ground can be thoroughly cleared of all surface rubbish. Farmyard manure at the rate of ten to twelve tons to the acre must then be ploughed deeply on the ground to the depth of ten inches or even more. The land is then left to be broken up by the winter frosts. By this method spring ploughing is avoided, and it only remains to work the soil in April in time for sowing. A good seed bed is easily secured by use of the harrow or roller. Let the roots have every opportunity of going deep. To help in this direction the under-soil must be well pulverised, whilst the upper layer should be somewhat more compact to ensure a downward direction of the growth. It is possible to grow sugar beet for several years in succession on the same piece of land although the plan is not to be commended. In such cases the crop deteriorates with each season and the plants are liable to be attacked by pests, particularly when the tops and leaves have been ploughed in. It is far better to grow the beet crop as the clearing crop in the rotation, replacing mangolds, swedes, or common turnip, to be followed by wheat, barley, oats, and seeds. Sugar beet is sometimes taken after a root crop, after a clover ley broken up early, or after peas or beans. There need be no hard and fast rule as to the exact place of sugar beet in any rotation, and each grower will adjust matters to suit his own requirements. Roughly speaking, all the manure in the rotation is applied to the sugar beet crop. If this enrichment of the ground is properly carried out no further fertiliser should be needed for the succeeding crops. The sugar beet crop will not exhaust the soil, and the manuring, together with the very thorough cultivation, which is imperative, will actually make the land in a better state than it was at the start. If farmers generally could only be made to realise this point they would look much more favourably on the sugar beet crop. The needs of the beet crop in the matter of manure are very similar to those which are usually applied to get a good harvest of potatoes. Sugar beet requires comparatively large quantities of potash and somewhat small amounts of nitrogen or phosphoric acid. The potash is closely connected with the formation of the sugar in the root. Phosphates are more needed for the production of seed or fruit in plants, a consideration which does not arise when beet is grown for the sake of its sugar. All beets which show a tendency to run to seed should be weeded out, as these will be deficient in sugar and they are injurious when the extraction of sugar is taking place in the factory. Of course the actual manurial treatment will vary according to the natural condition of the soil and the enrichment of the ground which has taken place in connection with other crops that have preceded the sugar beet. Every farmer knows his own land, and it is impossible to lay down hard and fast rules that will apply to all situations and conditions. The following examples, which have been prepared by the British Sugar Beet Society, Limited, may be of service to the grower who is taking up sugar beet culture for the first time.

	1. Heavy Soil.	2. Medium Soil.	3. Light Soil.
Farmyard Manure	10 to 12 tons	10 to 12 tons	10 to 12 tons
Lime	1 cwt.	2 cwt.	2—3 cwt.
Phosphates (30% to 35%)	6 cwt.	4 cwt.	2 cwt.
Potassium Salts (20%)	1 cwt.	3 cwt.	5 cwt.
Sulphate of Ammonia	1 cwt.	1 cwt.	1 cwt.
Nitrate of Soda ..	1½ cwt.	1½ cwt.	1½ cwt.

The farmyard manure and lime should be applied in the autumn, the phosphates, unless in the form of basic slag, and the potash in the spring. The sulphate of ammonia should be harrowed in when preparing the seed bed, and the nitrate of soda should be used as a surface dressing in two parts, half after the first hoeing, and the rest after the singling has been completed.

SEED SOWING.

Sugar beet seed is always supplied by the factory at cost price, and only crops grown from these seeds are accepted. Weather conditions vary so much from year to year that it is not possible to lay down a fixed date for drilling. Some portion of the beet crop is required by the factories early in October, and to meet this demand part of the acreage should be sown about the middle of April, but this is the earliest date. Tests have shown that very early sowings do not yield good results in the long run. A spell of mild weather in late March or early April will bring about rapid germination of the seeds. The almost certain coming of colder weather at a later date checks growth for a time, and the beets will then tend to run to seed on a large scale. The first sowing should not be postponed after the middle of April as, if satisfactory results are not then secured, there is a chance to re-sow. Where sugar beet culture is being carried out on a large scale it is wise to sow at three different times, allowing intervals of from ten days to a fortnight. The crops will not then require hoeing and singling at the same time, and as they do not ripen simultaneously the average sugar content at delivery is kept at a higher level. The factories require deliveries in equal quantities during the season from the first of October to the twentieth of December. The earlier sowings should, when possible, be made on the lightest soil, the later ones being more suitable where the ground is of a heavier nature. A first class seed bed is essential, and many patchy crops of sugar beet are due to the fact that the soil has been not sufficiently prepared. About 15 to 16lbs. per acre are required, and the seed should be drilled in flat rows about sixteen inches apart. In France, Germany and Holland, very much larger amounts of seeds are drilled, but experience in England has shown that the best results were secured with 15lbs. of seed per acre. There is no advantage in being sparing with the seed, for within reason the heavier the sowing the greater is the chance of securing a field of really robust plants. A certain proportion of the seeds are sure to fail to germinate properly and many of the young plants will fall victims to pests, and when sowing it is important to allow for this wastage. When germination does not go forward as well as it should, rolling, preferably across the rows will be found very helpful.

AFTER CULTIVATION.

The ultimate success of the sugar beet crop depends largely on singling (thinning) and the hoeing of the plants. The object is to induce all the energy of growth to be concentrated on the best plants and so encourage the development of sugar on the largest possible scale. Horse-hoeing should be done early and thoroughly until this is no longer possible, owing to the space between the rows being covered with leaves. It should be started just as soon as the young plants reveal themselves in rows, and must be kept up continuously. To illustrate the value of hoeing for the sugar beet crop, one cannot do better than quote the results of some experiments which were carried out in Germany some years ago. With one hoeing, the yield of roots was six tons per acre; with two hoeings, seven and a half tons; with three hoeings, nine and a half tons; with four hoeings, 11¼ tons; with five hoeings, 11¾ tons. Light draught horse hoes may be used for the purpose. On the Continent these are fitted with protecting disc coulters for the first time, later to be replaced by duck foot and angle tines as required. These hoes are capable of dealing with four rows at a time, and the tines can be adjusted to meet any irregularity in the rows. Avoid leaf damage, as these are the organs in which the sugar is manufactured. Unlike mangolds, the roots of sugar beet should be kept covered with soil, as exposed roots are apt to lose sugar content. When horse-hoeing is no longer possible the work must be carried on by hand between the rows. Constant cleaning of the land and stirring of the soil are essential features of sugar beet culture, right from the commencement of growth until the crop is finally harvested. Six weeks or so after sowing, by which time the plants should have four leaves apiece, singling must take place. Singling, which is best done by hand, consists of two operations. First, groups of plants in the row are isolated by cutting out with a hoe all intermediate plants so that the bunches are about 12 to 14 inches apart. The cuts should be at least 1½ins. deep to clear away any seed not yet germinated. The actual thinning takes place by loosening the soil in the bunch so that the plants fall apart. The strongest plant, which it is desired to leave, is held down, meanwhile all the others, and any weeds, are removed. To illustrate the importance of doing singling at the right time the following table compiled from experiments made in Germany is interesting.

Time of Singling.	Yield in Tons.
Right time	15 tons
One week later	13.5 „
Two weeks later	10 „
Three weeks later	7 „

There is no doubt that the yield per acre and the amount of sugar content in beet crops depends very largely upon early and proper singling.

PESTS.

In England, at any rate, the sugar beet does not seem to have any particular pests of its own. Generally speaking, the crop is not so commonly attacked by the mangold fly and other pests as is the mangold plant itself. The maggots of the mangold fly (*Anthomyia beta*) may, at times, do a considerable amount of damage by feeding on the leaves. The eggs are small and white, and these are laid in little patches beneath the leaves. The maggots, which are about a third of an inch long, are yellowish white in colour. Probably the best method of attack is to keep a sharp look out for infected plants, especially in the early stages of growth. These should be removed as far as possible and burned. Good cultivation which enables the plants to develop a generous amount of leafage will carry the crop to a stage when it will be able to resist ordinary attacks of the mangold fly without suffering to any serious extent. Another likely pest for which a sharp lookout should be maintained is the beet carrion beetle (*Silpha opaca*). This destructive insect is at times found in dead animals, but as well the grubs will at times almost completely destroy the leaves of beet and mangold plants. The grub is black and shining and, when fully grown, may be nearly half an inch long. It is notable on account of the fact that the tail segment has a sharp spine on either side. When fully fed the grubs bury themselves and form cells at the depth of three or four inches below the surface of the ground. Here they turn to pupæ, and from these the perfect beetle comes up after a few weeks. The beetles are of a dull brown colour and somewhat oval in shape. Like the mangold fly the beet carrion beetle is best fought by good methods of cultivation such as will stimulate a vigorous growth in the plants to permit the rapid replacement of damaged foliage.

HARVESTING.

It is most important that the sugar beet crop should be harvested as soon as it is ripe. This stage is reached when the plants stop growing and indications are to be seen in the drooping of the leaves and a yellowish tinge of the foliage. Before lifting takes place, about threequarters of the foliage should have wilted, but the central leaves must be still fresh and green. Just at this stage the roots contain the highest percentage of sugar in its purest form, and to lift earlier or later is to lessen the value of the crops from the factory standpoint. At times during a very fine hot summer, the sugar beet crop may assume a ripe appearance quite early in the season. In such cases, growth will start again with the coming of the early autumn rains. The lifting of the roots is done by two operations. A lifter like a special kind of fork is employed to loosen the beets from the surrounding soil. The roots are next pulled out by hand two at a time and knocked together to remove as much soil as possible. They are then thrown into heaps or laid in rows, as may be the more convenient. The topping is next carried out, a process which consists of cutting the crown of the root below the lowest leaf with one blow of a heavy knife. If the roots cannot be carted at once the heaps should be covered with tops and leaves to check any loss of sugar content through the action of sun or frost. If the frost danger is serious, the beets must be clamped like mangolds. There is, however, no risk of damage from frost whilst the roots are still in the ground. The tops and leaves should be left on the field. These are on the average, equal to 75 per cent. of the root when topped. There is no doubt that if ploughed in, the beet tops would be of considerable manurial value, but they might play a part in assisting pests which attack root crops. On the Continent beet tops are thought to be most valuable when used for feeding direct off the land for cattle, sheep and pigs. It is a custom to take the tops and leaves to the fields where cattle are grazing. In many parts the tops are ensiled to provide winter feeding. Beet tops certainly tend to increase milk flow, but some care is needed in use, as they have a pronounced laxative effect.

SENDING THE ROOTS TO THE FACTORY.

When the sugar beets have been harvested, the next question is to consider their delivery to the factory. The price paid by the factory is a delivered price per ton of washed and topped beets, and the actual amount varies according to the quantity of sugar contained as ascertained by the factory chemist. A calculation is made of the percentage of tare delivered by the owner in a fair sample, which is cleaned, and, if needful, re-topped. Obviously it pays the grower to carry out the original topping in a proper manner and also to despatch the roots in a clean condition and so avoid paying carriage on weight for which he does not receive payment. The roots are washed at the factory and not by the grower. The sugar content is judged from a sample of the roots in the form in which they enter the factory. As has been indicated, the top contains a negligible amount of sugar, and, if the topping has not been properly done, the proportion which the sugar content bears to the weight of the root as a whole will be reduced. This will have an important effect on the price received by the grower. If, through neglect of the points stated above, his yield is low, the profits per acre will be reduced. as payment is according to the actual net tonnage delivered. Trucks should be fully loaded, as the carriage rate for sugar beet is fixed upon a maximum load of six tons. Under the beet contract with the factory, the grower is allowed to buy back at a specially arranged price up to 5 per cent. of the net weight delivered in dried beet pulp. Dried beet pulp is the chief by-product of the factory, and this forms a most valuable food for stock, increasing the yield of fattening cattle and the milk flow of dairy cows. The farmer is thus able to return to his land all that the sugar beet crop has taken from it, and the dried pulp acts as a substitute for the ordinary root crops which would otherwise have to be grown.

THE VALUE OF THE SLICES.

When the roots reach the factory they go through the washing machine and from thence into the cutter. In this latter machine, they are cut into large thin wafers or into small wedge-shaped pieces of one and a half to two inches long and three-eighths of an inch thick. They are then carried into the Diffusion Batteries, which are a series of pans or vats where the slices are soaked in warm water, which, drawing the greater part of the sugar content from them, becomes the juice from which the sugar is made. The wet slices or pulp, still containing all the vegetable matter of the original root, are pressed to extract surplus water, and are finally completely dried. The dried slices when thus prepared for return to the grower look like light-coloured tea leaves and are almost as light in weight. One pound of dried slices, if soaked for two or three times its bulk (net weight) in water, will be brought back to the condition in which it left the diffusion batteries of the factory. Now and again, where factories are near at hand, farmers receive the wet pulp straight from the diffusion batteries, but in this form the food is not so easy to handle and it does not keep indefinitely, as is the case in a dry state. The great value of beet slices as food for many kinds of stock, especially dairy cows, has been demonstrated by many exhaustive tests both in Europe and America. As a matter of fact, in most beet-growing countries, the farmer grows the crop as much for the slices he secures as for the income received from the factory which takes his crop.

THE COST OF SUGAR BEET GROWING.

On the question of production cost where sugar beet is grown detailed statements are apt to be misleading, and this cannot be accurately ascertained for the purpose of average. As a rule, however, it is found that the total cost, however certain items may vary, works out at very much the same figure. Careful enquiries carried out by the British Sugar Beet Society brought the conclusion that £15 might, under present conditions, be considered as a fair average cost of growing an acre of beet and putting the produce on the rail. In quite a number of cases the cost has not exceeded £12. Of course, by far the greater cost in connection with the crop consists of labour, and as the grower gains experience he finds that it is possible to effect many economies in this direction. In some districts, such as the Spalding area, the cost per acre reached £20, but here the grower secured a much greater yield, which has more than compensated for the extra expense. The Society arrived at the conclusion that the average yield under normal conditions would be 10 tons per acre. In certain years the yield might be somewhat lower, but as against this there would be seasons when it would be considerably higher. An acre yielding ten tons of beet might be considered to cost not more than £15 and might very well involve an outlay of only £12. This gives the cost per ton of beet at 24s. to 30s. per ton on rail, and if the yield was greater the cost would be lower still. On this account it is more important to bear in mind the importance of hoeing and singling sugar beet crops in an efficient manner and at the proper time. Any failure or neglect in the matter of cultivation will surely spell a reduction in the ultimate profit secured by the grower. Sugar beet is certainly not a crop for the second rate farmer. It is quite useless to persuade the man whose farm is full of weeds to take up beet culture. Weeds may not matter to a large extent with some crops but they make all the difference between success and failure when it comes to the growing of sugar beet. An authority with wide experience of Continental methods has well said that the farmer who wants to grow sugar beet should think of his land as part of the kitchen garden. In the onion bed weeds are simply not tolerated, and the same should apply to the sugar beet fields. Sugar beet may be regarded as something very much like a market garden crop, and in this respect the crop should appeal particularly to small holders, quite apart from what the larger farmers might undertake. In many parts of Europe the entire family get to work on the beet fields when singling and hoeing has to be carried out, knowing that the more thorough the cultivation, the larger will be the reward when the time comes to send the roots to the factory. Something might be done in English villages in organising teams of men and women to accustom themselves to a regular beet campaign in order that the roots may give the greatest yield in the way of sugar content. The matter is really one of national importance. It has been estimated that if we grew 300,000 acres of beetroot in this country, it would give employment to 30,000 more men in addition to 15,000 who would find work in the factories.

THE REWARD OF THE SUGAR BEET GROWER.

To illustrate the reward of the sugar beet grower one cannot do better than give the actual experience of a farmer (Mr. J. L. Luddington, Wallington Hall, King's Lynn). At a meeting of the Farmers' Club held in March, 1925, Mr. Luddington gave the following interesting information. He states, "Last year I grew 51 acres in the Fens, and the net weight grown on that acreage was 686½ tons, an average of about 13½ tons per acre. The gross price per ton was 51/-, but when I had taken off carriage and other things, it came to about 42/-, but the total result was quite satisfactory to me. There are certain things that I should like to mention, the first being that I have not been able to improve the sugar content of the beet. I find that by good farming and by doing different things you can improve the weight of the crop, but I cannot find a way to improve the sugar content except that I have discovered that if you grow beet on Norfolk land as compared with the Fen land, you get from 2 to 3 per cent. more sugar. It seems to be more in the land than in the actual management of the crop. I think some little credit must be given to the farmers in connection with the growth of sugar beet. They have responded very freely indeed to the invitation to grow beet, and since they have seen that it has been a successful crop, and one that has paid, there has been no difficulty at all in a large acreage being grown for the factories. In fact the encouragement to the factories has been so great that now, in my neighbourhood, we have two factories within twelve miles of us. . . . . . This year we were unable to get our beet up early owing to the bad weather and late harvest. It was thought that that would mean a deterioration of the beet at the latter end. I began raising my beet in October and I finished in the middle of January, and I found that the average percentage of sugar was quite as great at the end as at the beginning. I also had one piece that was a thick plant and one piece rather thin. In the heavy portion there were 16 to 17 tons to the acre, but I did not find in the thin portion I got any less proportion of sugar than I did in the thick. Of course, in a small root you do get a larger percentage of sugar compared with a big one, and that is one reason of the rather smaller percentage in the Fens because we grow such big roots."

THE FUTURE OF SUGAR BEET GROWING.

It is important that the sugar beet grower should understand the special position of the industry as a whole. This is peculiar and complicated in its character and organisation and, in every country in which it flourishes, State encouragement in the initial stages has been needed. In most countries the industry still receives help from the taxpayer, usually in protectionist countries as part of their general tariff. In Holland, a free-trade country like England, the sugar beet industry received state assistance for fifty years before it became self supporting. England is the only country in which the industry has been started without State aid. The result was not encouraging, and the nation was forced to the decision that some assistance must be rendered. During the years 1921 and 1922 British produced sugar was granted an exemption from the excise duty imposed on the imported article, and in this way was granted an indirect State subsidy. For its success this system depended on a high revenue tax on imported sugar. When the customs duty on imported sugar was reduced in March, 1924, the effect was to prejudice the position of the home sugar producer. In the following year the new Government introduced the British Sugar Subsidy Bill, which was subsequently passed. Briefly, this re-imposes the Excise Duty (the countervailing duty to the

Customs Duty), and grants a subsidy on sugar produced at definite rates in a diminishing scale for the period of ten years, after which it ceases. The subsidy starts at 19s. 6d. per cwt. for four years, then 13s. for the next three years, and finally 6s. 6d. for the remaining three years. During this period of ten years of declining State assistance the industry must accommodate itself so that, in the end, it will be an entirely self-supporting enterprise. If this does not happen, sugar beet culture in Britain may die out altogether. The question which has to be solved is, How can we arrive at that point when the sugar factory without State aid can sell sugar freely at prices which will face world competition and at the same time give the farmer a price at which he can grow the roots profitably? This is a problem which not only the factory owners must consider ; it is also a question in which the farmer is equally interested.

THE POSITION OF THE SUGAR MANUFACTURER.

Briefly, the position of the manufacturer may be stated as follows :—He needs the subsidy, otherwise he cannot hope to attract the capital which is essential for the carrying on of the industry. Naturally capital is timid to enter a new industry unless there is some definite fixed guarantee, such as the subsidy offers. The manufacturer only receives the subsidy in respect of sugar he actually produces. To make this sugar he must get the farmer to supply him with the raw material—sugar beet. Naturally it is important, from the factory standpoint, that this raw material should be delivered at the lowest possible price. Yet it is not in the interests of the manufacturer to beat down the farmer's price. For the successful carrying on of sugar production it is essential that the beets should be of high quality, that there should be a large supply, and that the deliveries should be regular. Yet obviously the factory cannot afford to pay fancy prices. On his side, the farmer cannot grow sugar beet except at prices which are at the highest point of the scale. He, like the capitalist, must have a higher insurance premium against possible loss until he knows the full extent of his risks. Necessarily the farmer starting the growing of sugar beet has a good deal to learn by experience, and he cannot look for the maximum yield at the lowest cost during the first few years of his venture. Clearly the matter is one to which the manufacturer and farmer must both direct their attention. Many a farmer will say that he is not concerned with the difficulties that face the manufacturer, but as a matter of fact he is. If the farmer demands too much in the initial years for his beets, or does not supply enough beets or those of high sugar content, the factory cannot succeed to the extent which should be possible. Then the farmer inevitably suffers. His market, the factory, will perhaps close down altogether or, at the best, be weak and unreliable, so that the disposal of the beet crop at a good price will be doubtful. As far as the farmer is concerned, the test which he should apply to a factory is not how much profit it makes, but how much it distributes. Every pound left in the business by way of depreciation or reserves and sinking funds will strengthen the concern as a whole, and enable it to pay a higher price for the roots in future. Any loss suffered by the factory is certain to react on the farmer in the future, and an area which is fortunate to possess a strong, well-managed factory is always at a great advantage. If, owing to failure to get the best possible results, the industry of sugar beet production does not become strong and stable, there will come a time when the factory will be forced to offer, and the farmer to accept, a beet price at which the farmer cannot, or is not prepared to, grow beet crops. No one can say what prices will be in the future. These will not necessarily be the Continental beet price to-day, or even the Continental price prevailing at the time. Commercial prices differ widely in various countries, and we must remember that all over the world labour costs are on the upgrade. The beet price is not at all likely to be 54s., to-day's guarantee minimum, on a 15½% sugar content basis under the three years contract at the existing factories. This, with the sugar content bonus, is at least 20s. higher than the price prevailing on the Continent. It is possible that the price may not be more than 30s. nor less than 25s. on the 15% sugar content basis after adding the carriage rate to the factory. By that time this should not exceed 2s. 6d. to 3s. per ton by reason of the contraction of the growing area as the culture of sugar beet becomes more general.

HOW THE PROBLEM IS TO BE SOLVED.

The question of the future is how the farmer can continue to grow sugar beet at a profit and yet sell it to the factories at a price which will enable them to keep going. As has already been indicated, Holland is the only free-trade country where the cultivation of sugar beet and the extraction of sugar is successfully carried on at the present time. Mr. Alfred Wood has compiled two interesting tables which show the comparative costs in Britain and the Netherlands, where sugar beet growing is concerned. These are well worth reproducing here.

HOLLAND.

	Average per Acre.				Ranging.						
	£	s.	d.		£	s.	d.		£	s.	d.
1.—Manure	2	13	7	From	1	7	5	to	4	1	9
2.—Cultivation	2	14	1		1	13	2		4	15	4
3.—Cleaning	2	9	2		1	13	2		4	5	8
4.—Lifting	2	9	10		1	5	8		3	11	9
5.—Loading	2	6	4		1	4	6		3	13	4
6.—Seed	0	8	9		0	4	5		0	15	10
	13	1	9		9	6	6		16	2	8
7.—Rent Charges ..	5	19	2		5	10	0		6	8	4
Total	£19	0	11		£15	14	10		£21	12	8

ENGLAND.

	Average per Acre.				Ranging.						
	£	s.	d.		£	s.	d.		£	s.	d.
1.—Manure	4	0	9	From	2	2	0	to	6	10	11
2.—Cultivation	2	19	2		2	3	1		4	3	0
3.—Cleaning	2	10	8		1	9	9		4	0	6
4.—Lifting	2	8	7		2	0	6		2	15	0
5.—Loading	2	0	5		1	11	0		3	0	0
6.—Seed	0	7	9		0	6	0		0	9	7
	14	7	4		12	5	10		15	16	9
7.—Rent	1	10	3		1	2	6		2	0	0
Total ..	£15	17	9		£13	9	10		£17	14	10

The figures given in the above tables are worth a close examination. For one thing they show that the work on the field in Holland costs much the same as in England, namely, £9 19s. 5d., as against the English average of £9 18s. 10d. This is particularly shown in the cost of the cleaning and lifting operations. In the Netherlands the wages are slightly less than the wages of the agricultural labourer in this country, but the difference is not marked. There is little doubt that the Dutch labourer, with his much greater experience of a sugar beet crop, gives better results for the wages paid to him. This appears to be the road by means of which the English grower may economise and so secure an offset to the rising costs of agricultural wages. When lifting, the Dutch farmer has a heavier weight of beets to handle for the costs shown. Lifting by hand with the use of a spud is the common practice on the Continent, particularly in Holland and France. In this country certain experiments with machines for lifting indicate that by this means costs might be materially reduced. Both the operations of cleaning and lifting are commonly carried on in Holland on a piecework basis, and this is also becoming the practice in England. One point in the table will be noted, and that is that the charge for manures is much heavier in England than in Holland, £4 0s. 9d., against £2 13s. 7d. The Dutch farmer charges to his beet crop all the manures used except the farmyard manures. It is a fact that the Dutch farmer is more liberal with his seed, but the most remarkable point of all is that the English farmer enjoys over the Dutch farmer an average saving in rent of £4 8s. 9d. per acre.

In a comment on the tables of comparison given, Mr. Wood says "Comparison of the English and Dutch costs, however..... show little room for drastic economy. Instead of looking for reduction in the bulk cost per acre we must therefore examine such means as are available to us for reducing the unit cost, that is to say, by securing increased results from the same outlay." Mr. Wood goes on to say, "I am satisfied that the question of overwhelming importance is that of yield. There is here, in point of fact, a greater opportunity for real economy than in all the detailed items of growing costs put together. All manufacturers recognise that this question of output is a leading factor for economy; we find the same applies in the case of the beet manufacturer." Calculations as to yield of beet crops in England and Continental countries show that there is a margin of four tons per acre to make up to arrive at the Continent average of 13 tons. This has been proved conclusively to be nothing to do with any advantage enjoyed in the way of climatic or soil conditions. Figures obtained in various parts of Britain show beyond a doubt that the beet yield can equal, and in some cases exceed, that secured on the Continent.

The general failure in England to obtain the Continental average yield is, under present conditions of beet growing, due to the leakage between cost and return. Foreign countries realised a long while ago what an important factor for profit was yield, and they have always concentrated on that point. The remedy is simple. As Mr. Wood has stated, "The beet crop should be considered as the nurse of the particular land it is grown upon in order to restore it to full activity. Then, for the succeeding crops, the land can be more or less left to itself. Each field in its sugar beet year should receive the greatest care, the most attentive and constant labour, the greatest nourishment in manure, etc., the widest freedom from foreign elements like weeds. Each plant should be a chosen plant carefully selected for full growth and isolated from all other beet plants within its radius. Then other plants should be taken away at the earliest possible moment so as not to share with it the plant food, air and moisture, the selected beet requires. All weeds which so greedily seize the nourishment required by the young plant should also be destroyed the moment they show themselves. Constant dressing of the surface land, and hoeing and loosening of the soil around the chosen plant is necessary. Moreover, deep tillage is absolutely essential to give the root its full grip and momentum downwards. Its habit is to seek depth with its tap root and a wide range of activity for its innumerable rootlets and root hairs which it throws out in search of moisture.

The sugar beet grower should remember that a more expensive bulk cost may actually help in arriving at a cheaper unit cost. The possibilities of keeping up this cheaper unit cost when secured and finally to return to the former cheaper bulk cost reducing the unit cost further, can then be fully explored. Naturally, as the scheme goes forward, both labour and organisation are being tuned up to greater efficiency, giving a larger output of work at a lower price. As an instance, let it be assumed that a grower secures a yield of seven net tons per acre at a cost of £14. This means a cost per ton of 40s. He now increases his cost to £18 by spending more on hoeing, fertilisers, and on general attention to the crop. By doing so he finds that he has increased his yield to 12 tons per acre or five tons more. His unit cost is not now 40s., but 30s. per ton, or a saving of 10s. per ton. This does not wholly represent the savings which have been effected. It is incorrect to say that he has secured £6 more profit, or 10s. per ton on 12 tons. What he has actually done is to produce from the same acre 7 tons at the old price of 40s. per ton and gained an additional 5 tons for sale at the further cost of £4. In this case it may be assumed the beet price has given him a profit of 15s. per ton on the cost of the 7 ton crop grown for £14. That is to say, his profit was £5 5s. The profit on the 12 ton crop is therefore an additional £13 15s., making a total of £19. The final net profit is therefore £15 instead of £5 5s. 0d. Thus it will be seen that the spending of more money and attention on the beet crop will surely result in a more valuable harvest. The roots will be better shaped, less fangy, their rootlet system more perfect, their leaf formation (where the sugar is made for storage in the roots) more complete. A higher average sugar content is the result. This may mean a gain of at least one per cent. more in sugar content at 2s. 6d. per ton, adding a further 30s. to his profit per acre. These points serve to show that the English farmer can grow a beet crop equal to that of Continental countries if he establishes the same principle in his farming arrangement. The sugar beet crop must take first place among the crops in the rotation from the point of view of care and attention, and it should never be regarded as a subsidiary crop. This will reflect itself immediately as shown in making the beet crop one of the better, if not the best, profit producing crops.

CONCLUSION.

In conclusion, one may again draw attention to the indirect advantages of growing sugar beet as a crop. On the Continent the indirect advantages which accrue are regarded as of great importance. In fact, these indirect advantages are usually considered to be of more value than any immediate profit which is made from the sale of the beet crop itself. So much is this the case, that the grower thinks it well worth while growing sugar beet even though the factory may pay him no more than the actual cost of production and delivery. First of all the grower has got his land into first-class condition without the cost he would have sustained if the land had been left as bare fallow, or if he had sown the land with mangolds or turnips. He has no losses on his root crop to charge against his cereal crops. He has secured his sugar pulp from the factory, thus replacing the roots he formerly grew for feeding purposes. As has been indicated, this food has been found to improve the condition of stock and increase the yield of dairy cows. When the pulp is received in dried slices far less space is required for storing than is required for an equivalent amount of roots. Much labour is saved in clamping, hauling and pulping roots, and, moreover, the slices (if kept in a dry place) do not deteriorate. When sending the beets to the factory the grower retains the tops and leaves, which in themselves are equal to an equivalent acreage of turnips, estimated at the value of £3 per acre. These fed to cattle have also a gratifying effect on milk production. There will be no need for the grower to manure his succeeding crops. All the manure required for the rotation will have been expended on the sugar beet crop. In addition, the effect of cultivating the land for the beet crop will have brought about such great improvements that the yield of the rotation crops which follow are increased by over 15 per cent. Thus, the grower of sugar beet can feel that by selecting this crop instead of mangolds or swedes he will improve his land, increase his stock, and secure substantial indirect gains, quite apart from the direct gains obtained in selling the roots to the factory and buying back the by-products.

II.—THE MANURING OF MAINCROP POTATOES.

By Brynmor Thomas, M.Sc., A.I.C., Kirton Agricultural Institute.

It is not possible to lay down general rules for the manuring of a crop which is grown upon many different types of soil, and under climatic conditions which vary widely. The following pages contain a necessarily brief survey of a big subject and embody the results of a few experiments which tend to modify the old ideas of what constitutes a well and truly balanced dressing for application to the crop under consideration. The conclusions arrived at are applicable, in their entirety, only to those districts which by reason of the character of their soils and climate, are naturally best fitted to the business of potato growing. Elsewhere the grower, while keeping in mind the special requirements of the crop, must adjust his manurial practice to suit the peculiarities of his own soil and local climatic conditions.

POTATO SOILS.

Though potatoes may be grown with some measure of success on almost any type of soil, they favour, above every other, a free-working loam, with good artificial or natural drainage. The best potato soils are usually, but not of necessity, of high original fertility, and should possess the essential qualification of responding to heavy dressings of artificial manures without sickening.

It is not the purpose of this article to describe in detail the characteristics of all the soils upon which potato growing is practised; the analyses, given below, of samples drawn from two famous potato growing districts will serve to typify some of the soils best suited to produce quality of tuber or weight of crop.

	No. 1. Lincolnshire Silt Soil. Swineshead.	No. 2. Light Loam Dunbar 1.	No. 3. Lincolnshire Black Fen Soil Deeping St. Nicholas.
Moisture	3.06	1.08	11.22
Loss on Ignition	4.36	6.16	28.62
Total Phosphoric Acid (P_2O_5)	.170	.120	.552
Available ,, ,, ,,	.065	.022	.029
Total Potash (K_2O)	.237	.460	.587
Available ,, ,,	.006	.023	.022
Calcium Carbonate	1.22	.31	Nil.
Nitrogen	.221	.162	1.13
Lime Requirement	Nil	—	.535
Fine Gravel	Nil.	.99	
Coarse Sand	.71	23.66	
Fine Sand	68.82	35.18	
Silt	8.72	6.81	
Fine Silt	7.25	11.80	
Clay	6.88	9.48	

Hall, Sir A. D. The Soil, p. 342.

All these soils are possessed of very considerable inherent fertility, which has been augmented by generous treatment in the past. The black soils in particular are short of nothing except lime, the reserves of nitrogen, phosphates and potash which they contain being very large.

It should nevertheless, be remembered that the mere quantities of plant food present in any soil do not afford a reliable indication of the response which that soil is likely to show to manures. Provided that the percentages of the essential plant foods are above the poverty line, they appear to exercise very slight influence on the cropping capacity of the soil. The amount of lime present is immaterial so far as potatoes are concerned, but, as will be shown later, there is probably some limit to the acidity which this crop will stand.

The quality of the tuber is influenced, in some little understood fashion, by the soil upon which it is grown. Thus the red soils of the Dunbar district grow tubers of the very finest quality which can usually be relied upon to command more money than the Lincolnshire silt land produce, while the latter will always bring a better price than black land potatoes.

ORGANIC MANURES.

Three distinct systems of manuring may be applied to potatoes. The dressing may consist of :—

1. Artificial manures only.
2. Farmyard manure supplemented by artificials.
3. Farmyard manure only.

The first two systems are quite commonly practised, and the last so seldom that it need not be further considered. Archibald Findlay,[3] while commending the use of artificial and organic manures together, states that the best potatoes can be grown with chemical manures only. This is probably the case in the potato-growing districts of Scotland, where the crop comes once in a comparatively long rotation. This rotation embodies swedes and clover, both of which may be fed off on the land by sheep receiving additional concentrates. What constitutes sound practice under these conditions is bad husbandry in Eastern England, where the same land may carry potatoes year after year, and receive totally inadequate dressings of dung at long intervals. It is true that the chemical manures are not stinted, in some instances dressings of 30 cwts. per acre may be applied, but sooner or later the system breaks down, and the land will no longer grow potatoes. Various diseases make their appearance, and are credited with being the cause of the failure. These diseases are, in truth, the symptoms, not the cause; the land is "potato sick," and while the nature of the trouble itself is not understood, the predisposing cause is undoubtedly bad farming.

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[3] Findlay, A. The Potato, p. 4.

Any type of farming which does not admit of the periodical replenishment of the organic matter of the soil is fundamentally unsound, and if a sufficient head of live stock cannot be maintained for this purpose, then green manuring must be resorted to. Though such organic manures as shoddy, fishmeal, guano, soot, etc., are rather expensive, and not always available in large amount, they will pay to use when sufficient dung cannot be made to satisfy the demands of the potato land. Considerable quantities of soot and shoddy are used annually by some of the best Lincolnshire potato growers. The effectiveness of these manures was confirmed by some small-plot experiments recently carried out by the writer, and in which the following results were obtained :—

Plot.	Dressing.	Total yield per Plot of 22½ sq. yds.
1.	Sulphate of Ammonia	142 lbs.
2.	Shoddy	175 lbs.
3.	Soot	184 lbs.
4.	F'sh Meal	157 lbs.
5.	Peruvian Guano	167 lbs.
6.	Castor Meal	164 lbs.

Phosphoric acid and potash were supplied in addition to nitrogen; each plot received a dressing exactly equivalent to 4 cwts. 30% superphosphate, 2 cwts. sulphate of potash and 2½ cwts. sulphate of ammonia per acre. All the manures employed were analysed and the dressings calculated and weighed with scrupulous care. The variety was Tinwald Perfection and the seed once grown, and well "chitted." As the figures show, the yield throughout the plots was remarkably heavy, Plot No. 3 cropping at over 17½ tons per acre. While no very definite conclusions can be drawn from a simple experiment of this character, extending to one year only, the results are not without significance.

COMPOUND MANURES.

It is the custom in many of the important potato growing districts to use compound manures specially prepared by the manufacturers. Some growers mix their own compounds, and this is not a difficult matter if the constituents are in sound condition and a suitable "drier" such as steamed bone flour is employed. Nevertheless, when a large bulk is required, it is often convenient to purchase the artificials ready mixed, provided that the price is reasonable and the mixture contains the essential ingredients in the correct proportions. Unfortunately many of the "special potato manures" placed on the market are not of ideal constitution, but frequently contain excessive amounts of soluble phosphates and quite inadequate proportions of nitrogen and potash. Considerable improvement has been effected in this direction during the last two or three years, and this improvement will continue as more growers attain to an understanding of the part played in crop nutrition by the three important manurial elements enumerated above.

It is not possible to lay down hard and fast rules concerning the weight per acre of artificials to be used. This will depend upon the district, the capacity of the soil, the probable value of the produce and upon whether the crop received farmyard manure or not. On the silt soils of Lincolnshire the dressing of artificials may vary from 10 cwts. per acre, when used in conjunction with dung, up to 15 or 20 cwts. when no dung is available. On less productive land such dressings would not prove economical. In general it may be said that the usual weight of artificials employed is about 7 cwts., with dung and 9 to 10 cwts. without.

Whatever the actual weight of the mixture, its percentage, composition, and the form in which its constituents are present are of the first importance. Hence during the course of this article it is the "balance" of the mixture to which chief attention will be paid, and the phosphates, potash and nitrogen will be referred to in terms of the percentages which they constitute of the whole.

THE CONSTITUENTS OF THE COMPOUND POTATO MANURES.

The average compound contains nitrogen equal to about 5% of ammonia, but this percentage is by no means the highest which may be used with safety. An ideally balanced compound manure should contain between 7 and 8% of ammonia, and at Kirton in 1924 increases in yield were obtained by the use of mixtures containing over 10%. When the figure rose above 9.5% the damage resulting from blight became severe. A shortage of nitrogen on the other hand soon appears in the poor colour and lack of vigour which the foliage exhibits. These symptoms of nitrogen starvation are frequently present in a crop which has had 10 loads per acre of good muck, but no artificials. Nitrogenous manures must, however, be used with some caution, particularly when the crop follows a seeds ley ; when applied in excessive amounts they tend to produce a rankness of haulm which is not of necessity an indication of the weight of tubers beneath, and which renders the plant particularly susceptible to disease.

Sulphate of ammonia is the only inorganic nitrogenous manure which can be satisfactorily incorporated in a mixture, but apart from this qualification, it is probably without an equal where potatoes are concerned. As illustrative of the excellence of this fertiliser, Sir J. Russell[3] quotes the following experimental results :—

	Woburn[4] 1909		Devon[5] 1907-9		Aberdeen[6] 1907-9	
	Tons.	cwts.	Tons.	cwts.	Tons.	cwts.
No Nitrogen	14	12	9	18	8	6
Sulphate of Ammonia	15	19	12	—	9	12
Nitrolim	15	7	12	—	8	17
Nitrate of Soda	15	9	10	15	9	5
Nitrate of Lime	15	6	10	7	9	6

If top-dressing is resorted to, and this is not usually necessary when the sets are planted on an adequate weight of a good mixture, sulphate of ammonia and nitrate of soda are equally valuable.

It has already been shown that the best potato soils are light in character, and such soils are known to show less response to phosphates than heavier land. Again in many districts, the use over a considerable period of years of compound manures containing upwards of 20% of soluble phosphates has resulted in the formation of a large soil reserve of this constituent. On some of the Lincolnshire silt soils, the available phosphoric acid as determined by Dyers' citric solubility method amounts to .1% and an average figure is about .04%. Hence it might be concluded that phosphates are not usually the limiting factor where the successful cultivation of potatoes is concerned. This conclusion is borne out by Sir J. Russell, who states[7] that out of 178 recorded trials on the phosphatic manuring of potatoes, there was in 85 cases no response to phosphates. In 18 instances there was an actual depression in yield. The results of trials carried out at the Kirton Agricultural Institute[8] suggest that the effectiveness of phosphatic manures is influenced by season. In years of heavy rainfall the total omission of phosphates from the manurial mixture may result in no adverse effect on yield ; on the other hand, when the rainfall is normal, those plots which receive no phosphates show a marked inferiority in respect of size and vigour of foliage, and in the end yield disappointingly. This inferiority is particularly obvious in the early stages of growth and later almost disappears, but the crop never entirely recovers from the set-back which it has received. Hence a moderate dressing of some phosphatic fertiliser is indispensable under average conditions.

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[3] Journ. of Ministry of Agriculture & Fisheries, May, 1920
[4] Journ. Royal Agricultural Society, 1909, p. 385.
[5] Devon County Council Report, 1907-9, p. 6.
[6] Aberdeen and N. Scotland Coll. Leaflet 9, p. 2.
[7] Journ. of Ministry of Agriculture, February, 1923.
[8] Kirton Agricultural Reports, 1922-24.

When the percentage of phosphates in the mixture reaches a certain limit, then further additions are merely wasteful and will result in no further crop increase. The type of dressing recommended in agricultural text-books has a formula which usually approximates to the following :—

4	cwts.	Superphosphate.
1	,,	Sulphate of Ammonia.
1	,,	Muriate of Potash.

A mixture of this character, quite apart from the question of its adequacy as regards weight, is completely lacking in balance. The soluble phosphates here would work out at about 20% while there is good evidence that the ideal figure under average conditions lies between 12 and 15%.

The phosphates in compound manures, with the exception of the very small amount supplied by steamed bone flour when this material is used as a drier, are almost invariably present in the form of superphosphate. In some seasons rock phosphates, basic slag, and other phosphatic manures of comparatively low solubility may give useful results, but there is no reason to suppose that they will ever displace superphosphate from its pre-eminent position as a source of phosphates for potatoes. The less soluble fertilisers are not sufficiently rapid in action to produce satisfactory results in districts having a rainfall of not more than 30 inches. Steamed bone flour has given excellent results at Kirton, and it is said to be preferred to superphosphate in Cheshire, but is not available in sufficient quantity to admit of the possibility of its entirely replacing superphosphate.

Photosynthesis appears to be intimately associated with the presence of an adequate supply of potash, and the fact that typical potato soils are usually deficient in this element emphasises its importance in the nutrition of a starch producing crop like potatoes. Plots which have received no potash are characterised by foliage of a deep green colour and do not hold out well. In practice, these differences are not always seen by an unprejudiced observer, and the signs of potash starvation so often described are seldom encountered on soils of normal fertility. The size, shape and quality of the tubers are considerably influenced by the weight of potash supplied in relation to the other constituents of the mixture. The following results of trials conducted at Kirton in 1924 show that not less than 10% of potash should be present, which results are confirmatory of others obtained in 1922 and 1923.

Plot.		Percentage of Potash in Mixture.	Yield per acre (Mean of duplicates.)		
			Tons.	cwts.	lbs.
1.	4 cwts. Superphosphate (30%) 2½ cwts. Sulphate of Ammonia No Sulphate of Potash	Nil.	9	4	10
2.	4 cwts. Superphosphate (30%) 2½ cwts. Sulphate of Ammonia ½ cwt. Sulphate of Potash	3.5	9	2	68
3.	4 cwts. Superphosphate (30%) 2½ cwts. Sulphate of Ammonia 1 cwt. Sulphate of Potash	6.6	9	15	97
4.	4 cwts. Superphosphate (30%) 2½ cwts. Sulphate of Ammonia 1½ cwts. Sulphate of Potash	9.2	9	10	50
5.	4 cwts. Superphosphate (30%) 2½ cwts. Sulphate of Ammonia 2 cwts. Sulphate of Potash	11.6	10	7	21

While there is no evidence to support such an assumption, it is probable that mixtures containing even more than 10% of potash may prove economical on some of the lighter soils, and at least one case has come under the notice of the writer in which 15% has been included with satisfactory results. Although this figure is perhaps unnecessarily high, it is certain that the compound containing as little as 2% potash will no longer find acceptance as a sound potato manure.

It is essential that the source from which the potash of a purchased compound manure is derived should be known, for this factor exerts an appreciable influence on both the yield and quality of the crop. Kainit is a particularly undesirable fertiliser for potatoes; its use frequently results in a large percentage of misses, and always in the production of stunted haulm of unhealthy colour. These symptoms give a fair indication of the condition of the tubers, which are usually of inferior cooking quality and fail to weigh. The other low-grade potash salts are very similar in action, although both yield and quality vary inversely as the amount of common salt which they contain. Common salt was at one time used on some of the lighter potato soils, and undoubtedly exercises some effect on the moisture content of the soil in dry seasons; in addition, it probably increases the availability of the soil potash. These advantages are, however, quite outweighed by the objectionable features enumerated above. The application of kainit separately, in the autumn previous to taking a potato crop, results in the partial elimination of its adverse effects, but this fertiliser cannot, under any conditions, be regarded as suitable for potatoes.

There is no definite evidence to show that the sulphate of potash is superior to the muriate in respect of yield. The results obtained at Kirton over 3 years and quoted below are entirely inconclusive on this point. Tubers grown with sulphate are, however, definitely superior as regards quality, having a much more floury consistency than those grown with muriate of potash or any of the lower grade salts. A really expert buyer can usually detect these differences of quality without resorting to the cooking test. It should be remembered that the sulphate of potash usually costs about one shilling per unit more than the muriate, and it will certainly not pay to use the former unless a buyer can be found who is prepared to make allowances for quality. The following figures illustrate the relative values of the various potash salts.

		Total Yield per acre (Mean of duplicates)								
		1922.			1923.			1924.		
		Tons	cwts.	lbs.	Tons	cwts.	lbs.	Tons	cwts	lbs.
Plot 1.	Sulphate of Potash	10	—	16	13	8	14	9	3	76
Plot 2.	Muriate of Potash	10	2	70	11	9	80	9	19	77
Plot 3.	30% Potash Salts				11	18	56	8	12	18
Plot 4.	20% Potash Salts				11	7	56	8	19	59
Plot 5.	14% Kainit	8	3	—	11	8	84	8	7	31

Each of the above plots received equal weights of a mixture of identical constitution which contained, in addition to its own particular potash salt, adequate proportions of nitrogen and soluble phosphates.

Experiments have been carried out from time to time with a variety of salts of no known direct manurial value which were supposed to increase the availability of the soil potash. Sulphate of soda, silicate of soda, magnesium salts and gypsum, have been used with this purpose in view, but there is little conclusive evidence as to their value.

THE USE OF LIME ON POTATO LAND.

It is very well known that satisfactory crops of potatoes can be grown on land which has a decidedly acid reaction. There is no reliable evidence to show that the same land, if brought to a condition of neutrality by the application of sufficient lime, would not produce equally good or even better crops. Moreover, it is certain that the land will be able to carry mangolds, seeds, sugar beet, or barley with better prospects of success than it would otherwise have had.

On fen soils containing large amounts of humus very satisfactory yields can be obtained despite the presence of a high degree of acidity. It seems probable that a much smaller " lime requirement " than is associated with fen soils assumes a more serious aspect in the case of silt soils, and may adversely affect the yield even of such an acid-tolerant crop as potatoes. The writer has enquired into several cases in which isolated patches in fields situated on the Lincolnshire alluvial soils consistently cropped badly. When the fullest investigation had failed to reveal any other circumstances, likely to account for this partial crop failure, it was found that the affected patch had a high " lime requirement," while adjacent land which carried a normal crop had an alkaline reaction or was only slightly acid. Hence, it may be assumed that, on certain soils at least, there is a limit to the degree of acidity which potatoes will tolerate.

The opinion that lime, if applied during the autumn previous to planting will seriously reduce the yield of the potato crop, is somewhat widely held by practical men. Such opinion must be treated with respect, but it should be recorded that the experimental evidence that may be adduced in support of it is not of a very convincing character.

Common scab is known to be prevalent on soils which are naturally well endowed with lime, but there is no reason to suppose that the use of moderate dressings on sour land will induce this disease. Collins[9] states that he has applied 20 tons of lime per acre without any exhibition of scab on a following potato crop, and that basic slag was similarly without effect in producing scab.

THE EFFECT OF MANURING ON DISEASE.

In the summer of 1924 it was noticed that the degree of severity with which the manurial plots on the Kirton·Institute Experimental Farm had been attacked by " blight " and other disease showed a marked variation. Under these circumstances it was thought worth while to make some detailed investigations with a view to determining the effect, if any, exercised by manurial treatment on the susceptibility of the potato crop to disease. Although it has long been known that the system of manuring followed is capable of exercising considerable influence, adverse or otherwise, on the disease resisting powers of certain crops, little attention in this respect appears to have been paid to the potato. The results of these investigations are fully reported elsewhere,[10] but a brief survey of the work done and the conclusions reached may fittingly be included in this article.

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[9] Collins, S. H., Chemical Fertilisers, p. 219.

The numbers of diseased and healthy plants in the two middle rows of each plot were counted; every plant was carefully examined, and if infected, a note was made of the disease present. The principal disease affecting the crop was Phytophthora infestans (potato blight).

It has been shown at Rothamsted and Woburn that the excessive application of nitrogen to cereal crops seriously increases the incidence of rust and mildew. At Cheshunt tomatoes similarly treated proved very susceptible to "stripe" and other diseases, and it may be confidently assumed that practically all crops suffer in like fashion. The figures quoted below show that while moderate dressings of nitrogen increase the health and vigour of the crop, these is a definite limit, above which increased dressings favour the incidence of disease.

Plot.		Percentage of Healthy Plants.
1.	No Nitrogen	35.7%
2.	2 cwts. Sulphate of Ammonia	35.4%
3.	2½ ,, ,, ,, ,,	45.5%
4.	3 ,, ,, ,, ,,	53.8%
5.	3½ ,, ,, ,, ,,	53.8%
6.	4 ,, ,, ,, ,,	46.8%

Although the percentages of healthy plants on the duplicate plots were higher, the figures, if plotted, would produce a very similar curve to that obtainable from the results given above. As stated elsewhere, the mixture used on Plot 5 contained 9.5% of nitrogen calculated as ammonia, and this probably constitutes the limit referred to above.

The value of potash in conferring immunity to disease is too well appreciated to need further emphasis here; its omission from an otherwise complete manure has been found to have the same deleterious effect on the health of plants as the excessive use of nitrogen. It suffices to state that the results obtained in the investigation here considered, afforded full confirmation of the fact that potash manures, by hardening the tissues, or in some other little understood manner, greatly increased the disease resisting capacity of the plant. The lower grade potash salts were found to be less effective in this direction than either the sulphate or the muriate of potash.

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[10] Miles H. W. and Thomas B., A Preliminary Study of the Relationship between Manuring and Susceptibility to Disease in Potatoes, Journ. of Agricultural Science, Vol. XV., Part 1.

Perhaps the most surprising conclusion reached was that excessive applications of phosphatic manures may result in the same undesirable effects that are produced by disproportionately large amounts of nitrogen. This fact may possibly be accounted for by the manurial practices followed during the past 30 years on Lincolnshire potato soils. It is conceivable that the large reserve of soil phosphates, built up by the rather excessive use of superphosphate as a constituent of potato manure, has further upset the balance of the mixture employed. On plots to which a really well-balanced mixture had been applied it was found that the health of the crop increased steadily with increasing dressings of the manure, even though these dressings reached 20 cwts. per acre.

MANURING OF FEN SOILS.

Among the many types of soil devoted to potato growing, the black fen soils stand in a class by themselves. Both physically and chemically they are essentially different from loams and sands, and require somewhat different manurial treatment.

Experiments carried out by Cambridge University[11] over a period of nine years on the fen soils of the Isle of Ely and Huntingdonshire, indicate that phosphatic manures only are required, and that superphosphate will give a better return than any other fertiliser of this class. The conclusion was reached that nitrogenous and potash manures were not an economic proposition when used in conjunction with heavy dressings of superphosphate. The latter manure was applied at the rate of 10 cwts. per acre. A few of the results obtained at Ramsey in 1906 are given below :—

Manures.	Cost of Manures.	Yield.		Increase due to manures.		Profit* due to manures.
		Tons.	cwts.	Tons.	cwts.	
No artificials		9	12			
10 cwts. Superphosphate	25/-	11	15	2	3	61/-
10 cwts. Superphosphates with Nitrogen added	39/6	12	6	2	14	68/6
10 cwts. Superphosphate with Potash added	42/-	11	19	2	7	52/-
10 cwts. Superphosphate with Nitrogen & Potash added	54/6	12	5	2	13	51/6

(* Potatoes valued at 40/- per ton).

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[11] Cambs. Univ. Dept. of Agricultural Farmers' Bull, No. 6

The lessons of these experiments have been applied on black land in other districts, and many growers in the Lincolnshire fens have for years used nothing but superphosphate or compound manures containing almost negligible proportions of nitrogen and potash. Fen soils, owing to their high humus content, frequently test at from 1% to 1.5% of nitrogen. The idea that this fact precludes the possibility of any adequate return from nitrogenous manures is based on no very secure foundation. It might be suggested that some of these soils which are said to show such a ready response to superphosphate contain very large percentages of phosphoric acid of high availability, the probable result of long continued application of heavy dressings of phosphatic manures. In the experimental results given above it will be noticed that a dressing of nitrogen yields a small but appreciable profit, and had the produce been valued at £6 instead of £2 per ton, this profit would have been much more substantial.

If the constitution of compound potato manures designed for use on this type of land is any indication of the trend of the practical man's opinion, then it appears that the superphosphate fetish is losing ground. While such compounds formerly contained superphosphate, and little else, they are now usually provided with a reasonable percentage of both nitrogen and potash. Black land potato crops which have received superphosphate only will be observed to " finish " earlier than they would have done had they received a better balanced dressing. The omission of a supply of artificial nitrogen is reflected in the colour of the foliage, which is usually of a lighter shade of green than in the case of a normal crop.

In conclusion, it may be well to again emphasise the fact that the soundness of the manurial scheme depends on the attainment of a proper balance between the different fertilisers included in the mixture. Only when the essential plant foods are blended in the proportions best suited to the peculiar requirements of the potato, can maximum crop production and reasonable freedom from disease be assured.

No matter how judiciously this blending is carried out, or how generously the resulting mixture is applied, it is vain to expect efficient utilisation of the constituent fertilisers on land which is not maintained in a responsive condition by the periodical application of organic manures and the occasional use of lime. Neglect of these two first principles of good husbandry and excessive faith in the efficacy of artificial manures, must finally end in disillusionment.

III.—WEEDS OF PONDS, WATER-COURSES AND UNDRAINED LANDS.

By John Percival, Sc.D., M.A. (Professor of Agricultural Botany, University College. Reading),
and
H. C. Long, B.Sc.

GENERAL.

It has in recent years been held that of all practical steps which can be taken to improve agricultural production in this country the two outstanding ones are liming and draining. Where draining is needed it should certainly precede liming, and it may then be confidently anticipated that there will be a great improvement in the fertility of the area concerned. Indeed, draining alone may be expected to result in very considerable and immediate improvement.

Land subject to repeated and frequent flooding, low-lying land adjacent to water-courses which make it permanently saturated, and land on which water lies stagnant, are incapable of producing more than a small part of the crops or stock of which they would be capable under improved conditions. Such land is essentially unfit to grow good grasses and clovers, or produce an average arable crop; it is too full of water, too little aerated, and too acid for nitrification to take place. Under these circumstances, the roots of cultivated plants cannot perform their proper functions of permeating the soil, securing a wide hold below the surface. and obtaining adequate supplies of soluble mineral and nitrogenous plant foods. Growth is therefore arrested, the plants are visibly unhealthy, and the eventual yield is small. Further, loss of vigour renders the crop specially liable to attacks of insect and fungus pests. In so far as grass land is concerned, the position is much the same, but inasmuch as there is a continuous covering of green the results may not be so transparent as on arable land, and perhaps for this as much as any other reason most low-lying, wet and undrained land is left under the natural and unimproved sod.

A further serious loss due to the undrained state of much land is that concerned with parasitic diseases of livestock, in particular the liver fluke and parasitic worms. Such areas, too, are breeding grounds for such blood-sucking flies as mosquitoes, and on general grounds are not healthy for man or beast. An immediate improvement in these respects may be expected to follow draining and liming.

Finally, the natural conditions in relation to damp, undrained land are ideal for the spread of certain moisture-loving plants, which may rapidly extend their hold if nothing is done to prevent them invading the area.

For these reasons it is proposed in this article, to consider the relationship of wild plants to land of the type mentioned, and to make it the more complete by including water-courses, the choking of which with weeds is so largely responsible for the flooding of adjoining land. Indeed, the cleaning out of water-courses (ditches, streams and rivers) alone will often suffice to effect striking changes in areas involved (Figs. 1 and 2), while the addition of new drains of various types, followed by liming and judicious management, may end in unexpected transformation such as has long since taken place in the Fens of Lincolnshire, where a former inundated or swampy area is now a prosperous agricultural district.

It may nevertheless still be said that, owing to neglect, in many a water-course we find

> "Tangled mass on mass
> The water-weeds that net the fishes cool
> And scarce allow a narrow stream to pass."

This may delight the eye, prove a glory for an artist, and provide an ideal home for certain forms of wild life, but it is not conducive to proper drainage of the surrounding country, increased crops, the good health of live stock, or the reduction of water-loving weeds.

SPECIFIC.

In contrast to the requirements of most farm crops, it may be said that many wild plants are specially adapted to live either (1) floating free in water, unattached to the soil, in which case they derive their nourishment from substances dissolved in the water ; (2) with their roots in the mud or soil forming the bed of the river or pond, in which case the materials necessary for growth are taken by the roots from the soil, and also in part from the water by means of the leaves of the plants ; or (3) growing entirely in the soil among the ordinary herbage, but only where the conditions are such as to ensure a continuous and plentiful supply of water, as on undrained land, where the water-table is very near the surface.

When allowed to grow without interference, water-loving plants become troublesome in rivers, ponds, lakes, and ditches, as well as

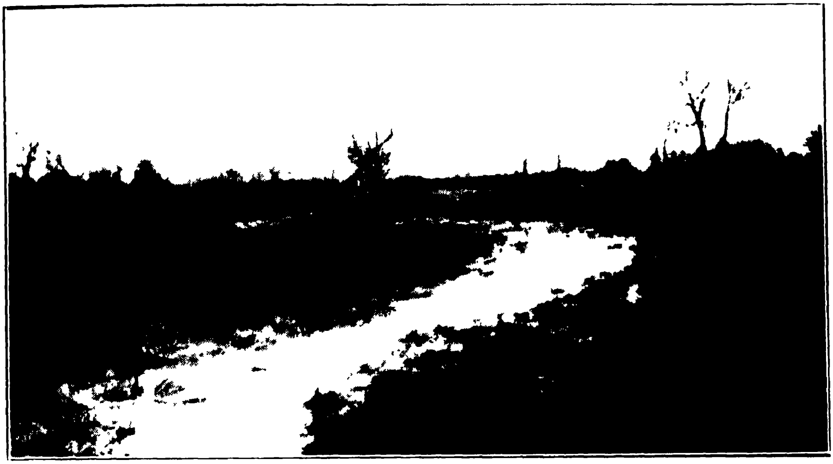


FIG. 1.--Before.

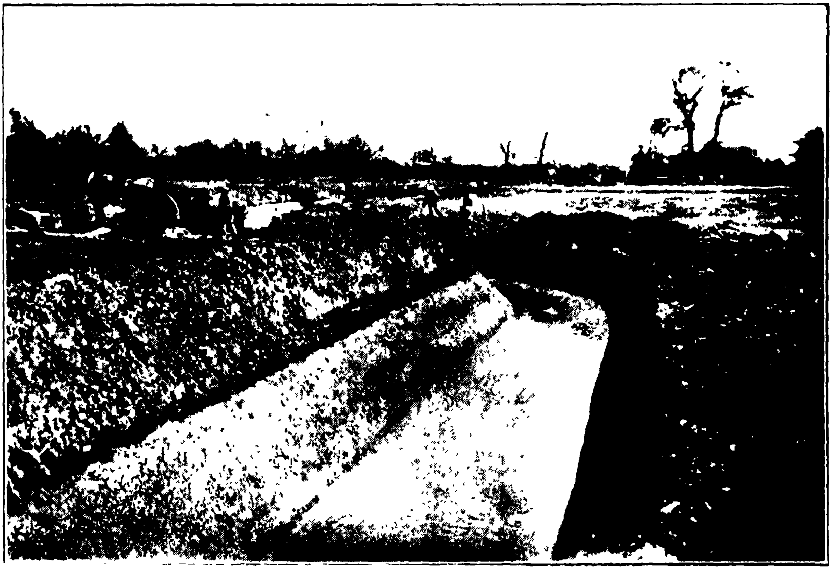
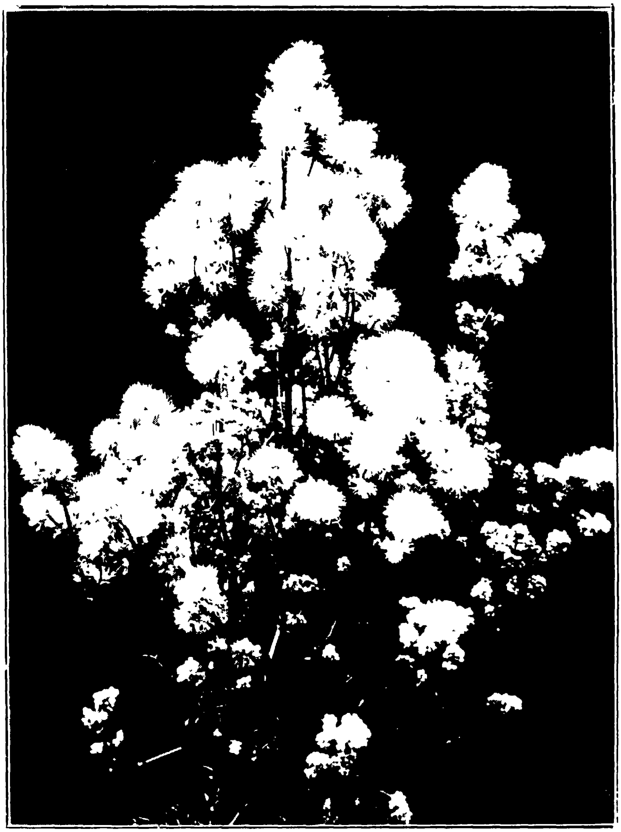


FIG. 2.--After.



Copyright. *Malby.*

FIG. 4. Meadow Rue (*Thalictrum flavum* L.).

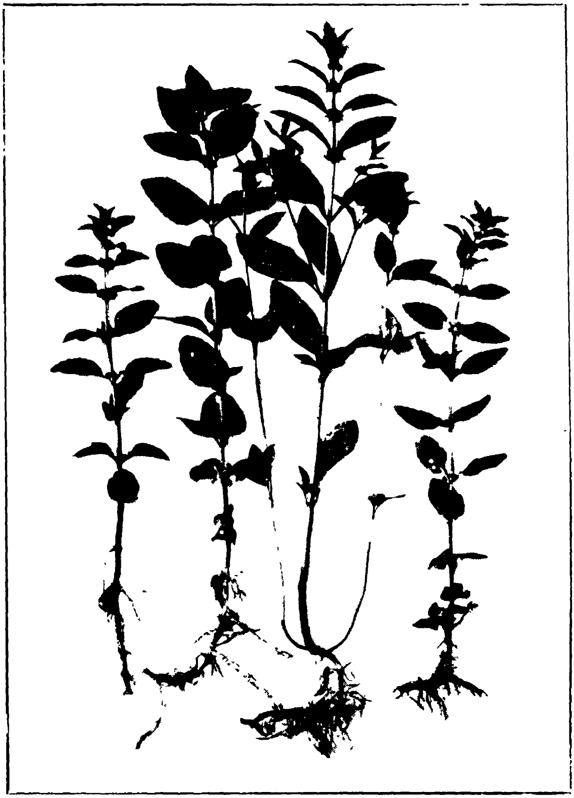


FIG. 7.—Corn or Field Mint (*Mentha arvensis* L.).

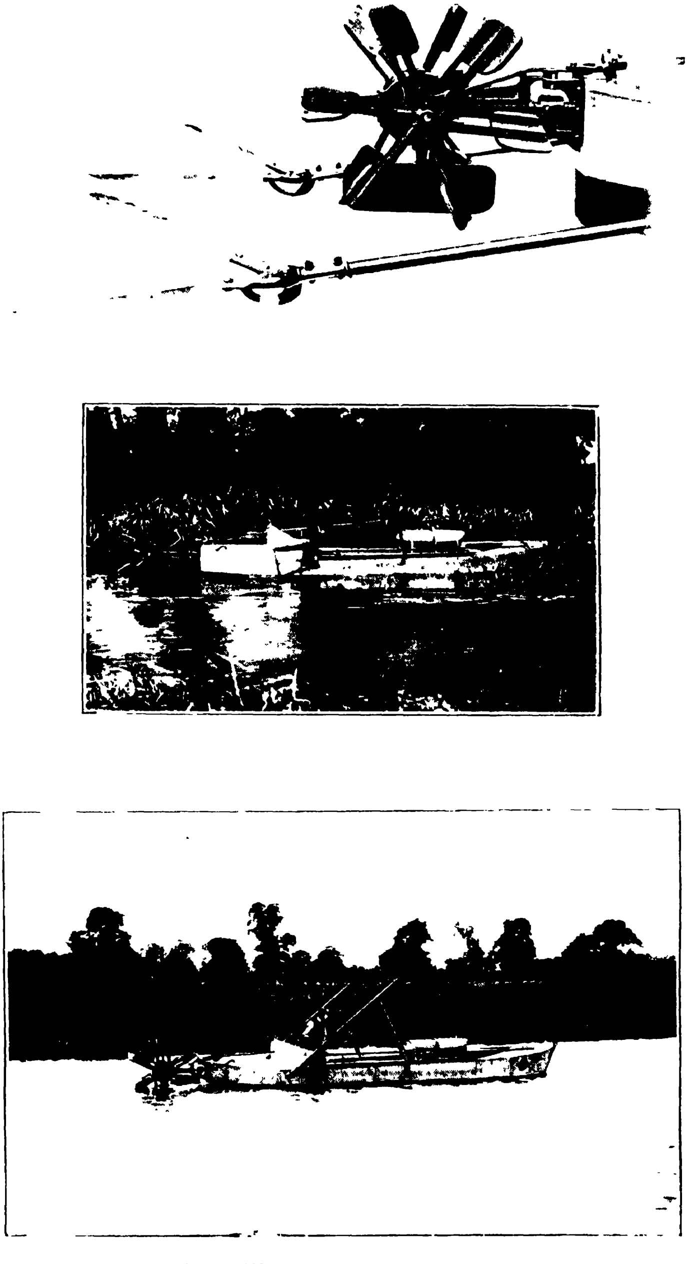


FIG. 17.—Motor Boat Weed Cutter (Crossley, Bedford). *Above:* Cutting apparatus and propellor. *Centre:* Before Cutting. *Below:* Clear water restored.

in the open field, and much expense must be incurred in keeping them down. Some of them choke the small streams and ditches in which they grow, and prevent the free drainage of water from adjoining land. Flooding of low-lying areas may arise through the blocking of water-courses by this class of weeds, and pasture and arable lands may thus be made less valuable for grazing purposes or the cultivation of cereals and other farm crops. As already stated, low-lying, continuously damp, undrained areas, are directly or indirectly responsible for live-stock diseases and pests. Canals and navigable rivers are frequently made almost impassable for traffic by the growth of water plants. Boating and bathing in lakes, ponds, and rivers may be rendered difficult and dangerous by them, and their presence in abundance may ruin the water for angling purposes. Skating may also be spoilt by floating weeds. Many plants found by the sides of streams and ditches, and on wet land generally, are poisonous and dangerous to stock which have access to them. Others entail much expense and annoyance by invading cultivated watercress beds.

In the open field water-loving plants act like other classes of weeds in taking the place of better plants and reducing the yield of grass or arable crop.

Water-loving plants exhibit very striking adaptation to their environment. Some of them, such as Water Lilies and certain kinds of *Potamogeton* and *Chara*, are only met with in fairly deep water, while others, such as Rushes, Reed Grass, Yellow Iris, and Marsh Marigold, are chiefly found in shallow water by the margins of ponds and streams. Brooklime and some forms of Water Crowfoot inhabit running streams; other plants are adapted to the stagnant or slow-moving water of ponds and canals.

A fairly marked succession of zones of vegetation is frequently observable at the sides of ponds, lakes, and slow-moving rivers. At the extreme edge, where the water joins the dry land, the ordinary herbage of the field is intermingled with plants such as *Caltha palustris*, *Ranunculus Flammula*, *Pedicularis palustris*, *Petasites vulgaris*, and various kinds of *Juncus* and *Carex*, which can grow freely in water-logged soil. In somewhat deeper water other species of *Carex*, Yellow Iris, Water Mint and *Phragmites communis* often predominate. Further in are seen the Bulrushes (*Scirpus lacustris* and *S. Tabernaemontani*) and *Equisetum limosum*; the yellow and white Water Lilies appear usually in from 6 to 12 feet of water, while many of the Potamogetons are found only where the water is 12 to 24 feet deep.

Fresh-water Algae and species of *Chara* and *Nitella* frequently cover the bed of the pond or lake in the deepest parts. In the surface water all over the pond, down to a depth of 8 or 9 feet, there are often present a vast number of Diatoms, Desmids, and other very minute Algae, forming the *plankton* or free floating vegetation.

Among the general herbage of the grass land will be found such weeds as Meadow Rue, Meadow Sweet, Rushes, Sedges, Lady's Smock, Cotton Grass, Tussock Grass and Horse-tails.

THE WORST SPECIES.

The following are some of the more important weeds of undrained land, ditches, ponds, and streams :—

RANUNCULACEÆ.

WATER CROWFOOT.—Under this name may be grouped a number of aquatic *Ranunculi*, which from a botanical point of view are closely related and difficult to distinguish from each other. They have white flowers with a yellow centre ; most of them have stems many feet long ; in some species only submerged, finely divided leaves are present, while others have in addition leaves with flat-lobed segments which float on the surface of the water.

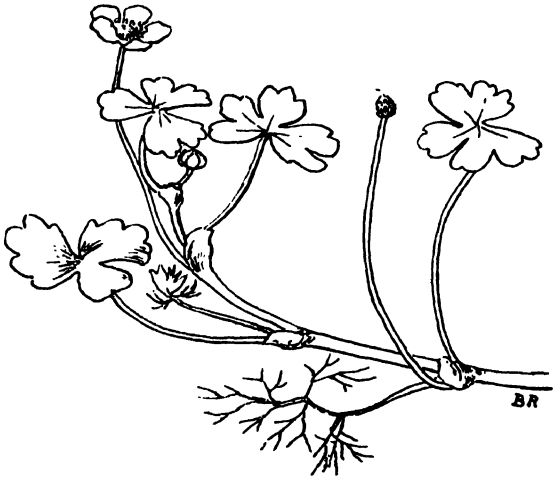


FIG. 3.—Water Crowfoot (*Ranunculus peltatus* Fries.), nat. size.

The following may be noted :—

R. heterophyllus Fries.—Floating leaves, three to five-lobed, nearly circular in outline ; submerged leaves, composed of long, thin, branch-like segments which are weak and collapse into the form of a paint brush when lifted out of the water.

R. peltatus Fries., resembles this, but the segments of the submerged leaves are more rigid, and do not close up when they are taken from the water (Fig. 3).

R. trichophyllus Chaix., found chiefly in stagnant water, has black, rigid, submerged leaves, with short flower stalks and few or no floating leaves.

R. fluitans Lamk. has long peduncles to the flowers ; leaves like the preceding. The plant is found usually in running water.

LESSER SPEARWORT (*R. Flammula* L.).—This weed occurs in ditches, wet meadows and marshes. It is usually about a foot high, with long, narrow, and lanceolate leaves ; the yellow flowers are about half an inch in diameter and open from June to August. This species is poisonous.

GREATER SPEARWORT (*R. Lingua* L.) is a somewhat rare species, with flowers like a large yellow buttercup, 1½ to 2 inches in diameter ; it is found in marshes and ditches. The leaves are long and undivided, lanceolate, with their base partly clasping the hollow, smooth stem.

CELERY-LEAVED CROWFOOT (*R. sceleratus* L.) is a thick-stemmed erect annual, 1 to 2 feet in height. The leaves have three irregular lobes, and the small yellow flowers, appearing between May and September, are only about a quarter of an inch in diameter. This weed occurs in ditches and wet meadows, and is very poisonous to stock.

MEADOW RUE (*Thalictrum flavum* L.) may occasionally prove a nuisance in wet meadows which require draining. It is a perennial 2 to 4 feet high, with creeping rootstock, pinnate leaves, and pale yellow flowers in large trusses. (Fig. 4).

MARSH MARIGOLD (*Caltha palustris* L.) is a well-known inhabitant of marshy places and ditches. The leaves are roundish or kidney-shaped, and the flowers golden-yellow, 1 to 2 inches in diameter.

NYMPHÆACEÆ.

YELLOW WATER-LILY (*Nuphar luteum* L.) is common in lakes and ditches which are from 6 to 12 or 15 feet deep. It possesses a strong creeping rootstock, which is buried in the mud below. The leaves are leathery, circular, and deeply divided at the base ; some of them are submerged, others float on the surface of the water. The yellow flowers, over 2 inches across, have eighteen to twenty petals, and smell like brandy. The plant is spread by means of its rootstock and by small seeds, which ripen into a berry above water.

WHITE WATER-LILY (*Nymphœa alba* L.) is also found in slow-moving streams and in ponds of clear water. The leaves have very long stalks and floating leaf-blades, which are circular, with cordate base. It is propagated by its strong fleshy rootstock, and by the seeds which are produced in a capsule ripening under water.

CRUCIFERÆ.

LADY'S SMOCK (*Cardamine pratensis* L.) is a well-known perennial weed of damp meadows which are drained imperfectly, if at all. It is frequently named cuckoo flower, and is usually about 1ft. high or over, having lilac flowers with four petals.

ROSACEÆ.

MEADOW-SWEET (*Spiræa Vlmaria* L.), or Queen of the Meadow, may sometimes occur extensively in water meadows, undrained fields and along the margins of streams. It is a well-known perennial, reaching 4 ft. in height, with fragrant small white flowers in compound cymes.

ONAGRACEÆ.

WILLOW HERBS (*Epilobium sp.*) are perennials which commonly grow by streams and ditches and in damp grass land. They bear many rosy-purple, funnel-shaped flowers about half an inch in diameter. They are 2 to 5 feet in height, mostly with lanceolate leaves.

UMBELLIFERÆ.

Many umbelliferous plants are inhabitants of wet places, or grow in water at the side of rivers and ponds and in ditches. The following are often troublesome weeds in such situations :—

MARSHWORT (*Apium nodiflorum* Reich.) is a pest with the habit of watercress, and sometimes found in watercress beds. The stem is procumbent, 1 to 3 feet, and takes root at the joints. The leaves are pinnate or trifoliate, the leaflets being usually ovate with blunt irregular serrations. The flowers are white, in umbels placed opposite to the leaves, and open from July to August.

Apium inundatum R. is an allied plant, which grows generally in deeper water. It has creeping or floating stems, and most of the leaves are submerged, with fine linear segments. The leaves at the surface of the water have pinnate, wedge-shaped leaflets. The flowers and umbels are very small, appearing from June to July.

COWBANE, or WATER HEMLOCK (*Cicuta virosa* L.) is one of the most poisonous of British plants, fortunately rare. It occurs in streams, ponds and damp places, and is from 2 to 4 feet high. It has a fleshy rootstock, large compound leaves with narrow serrated segments, and large umbels of small white flowers (July to August).

WATER DROPWORT (*Œnanthe crocata* L.) is another poisonous perennial weed of this order found in ditches, marshy and wet meadows. The rootstock is divided into somewhat spindle-shaped sections, the large compound leaves are much divided, and the umbels of white flowers appear in July ; the plant attains 2 to 5 feet in height.

MARSH PENNYWORT (*Hydrocotyle vulgaris* L.) occurs in marshy, damp grass land. It is a small creeping perennial, with almost circular leaves and umbels of pinkish-green flowers arising from the leaf axils between May and August.

WATER PARSNIP (*Sium angustifolium* L.) is a common ditch plant, with creeping rootstock and erect round stem, 1 to 3 feet high. The leaves are 4 to 8 inches long, pinnate, the leaflets ovate and irregularly lobed. The umbels of white flowers are lateral, opposite the leaves, flowering taking place in August.

VALERIANACEÆ.

VALERIAN, or ALL-HEAL (*Valeriana officinalis* L.) is a frequent inhabitant of ditches and marshy places by ponds and rivers. It is a tall plant, 2 to 4 feet high, with pinnate leaves, having four to ten pairs of lanceolate and usually serrate leaflets and one terminal leaflet. The flowers have five-lobed pale pink corollas, and are arranged in terminal corymbose clusters, opening in June to July.

HALORAGEÆ.

MARE'S TAIL (*Hippuris vulgaris* L.) is a common aquatic perennial at the edges of ponds and slow-moving streams. It has a stout creeping rootstock, and erect round stems about an eighth to a quarter of an inch in diameter (Fig. 5). The leaves are very narrow, about an inch long, and arranged in whorls six to twelve together at each of the many joints.

The flowers are green, very small, with no petals, and only one stamen.

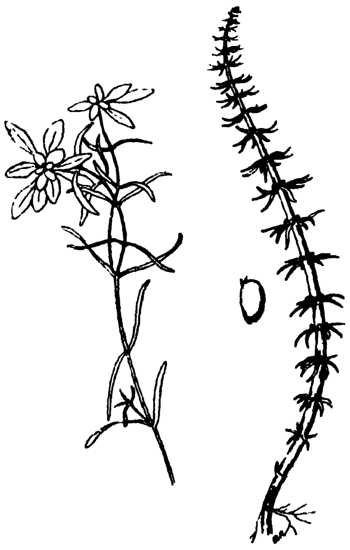


FIG. 5.—Left : Water Starwort (*Callitriche verna* L.), × ½. Right : Mare's Tail (*Hippuris vulgaris* L.), × ½, with fruit enlarged.

WATER STARWORT (*Callitriche verna* L.) is a very variable species, abundantly distributed in the water of ponds, ditches, and slow streams throughout the country, and often found growing on mud by the side of ponds. Watercress growers frequently complain of it as a pest. The typical form (Fig. 5) has delicate submerged round stems ; the leaves are opposite ; those under water are narrow and linear, others, which float on the surface, being broader, generally spatulate, and arranged in the form of a characteristic rosette. The flowers are very small, unisexual, the males with a single stamen, the female with two whitish bracts and a four-celled ovary.

C. autumnalis L. is a species with dark green submerged leaves only.

WATER MILFOIL (*Myriophyllum alterniflorum* DC.) is a frequent pest in lakes, ponds, and ditches, especially in hilly districts. It has a creeping rootstock, and long, thin floating submerged stems which bear whorls of very finely divided leaves.

The sexual organs are usually separated in different small, axillary white flowers.

In speaking of the damage by water-weeds to boating and angling in the Scotch lakes, Sir Herbert Maxwell once wrote,* that he would prefer to contend with the troublesome pest *Elodea* (see p. 41) than with *Myriophyllum*. The latter is "rampant every year" after midsummer; *Elodea* only once in six or seven seasons.

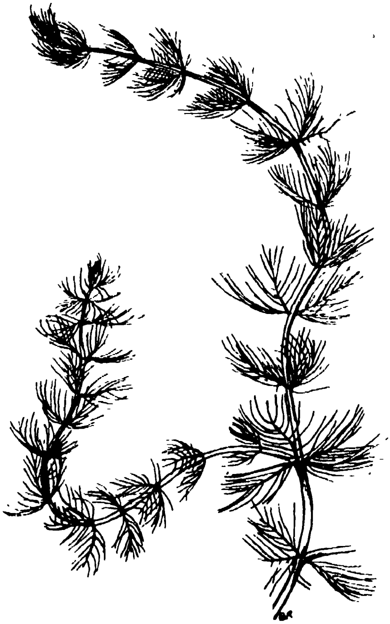


FIG. 6.—Water Milfoil (*Myriophyllum verticillatum* L.), × $\frac{2}{3}$.

Myriophyllum verticillatum L. (Fig. 6) is another common species of Water Milfoil very closely resembling the one already mentioned, but with stronger stems and more leaves in a whorl. The flowering spike is erect when in bud, that of *M. alterniflorum* being curved at the tip.

COMPOSITÆ.

HEMP-AGRIMONY (*Eupatorium cannabinum* L.) is a widely distributed plant, found on the banks of streams and in wet ditches. The stems are usually 2 to 4 feet high, round and woolly; the leaves consist of three to five lanceolate-serrated segments. The flowers are pale reddish-purple in colour, and arranged in dense terminal corymbs; they appear from July to September.

MARSH THISTLE (*Cnicus palustris* Hoffm.) is a biennial, dark purple flowered thistle commonly found in damp, undrained meadows and pastures.

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* Scotsman, Oct. 7, 1897.

COLTSFOOT (*Tussilago Farfara L.*) is a widely distributed weed of arable and grassland overlying heavy clay soils which are undrained or but imperfectly drained. It is a perennial, having a deep-seated creeping rootstock, and thick scaly flowering stems, each bearing a head of yellow flowers which open early in spring, before the large, densely downy leaves appear.

BUTTER-BUR (*Petasites vulgaris* Desf.) is a perennial having an extensively creeping rootstock, the pinkish or dull lilac flowers of which appear in cylindrical brush-like heads in early spring, before the leaves. The latter are very large (up to 3 feet in diameter), densely downy beneath, and resemble rhubarb leaves. The plant occurs on glass land subject to flooding, by the sides of streams, and in low-lying meadows near water-courses.

SCROPHULARIACEÆ.

MARSH FIGWORT (*Scrophularia aquatica* L.) is often abundant on the edges of ponds, rivers, and ditches, where it impedes the flow of water and interferes with angling.

It has a well developed creeping rootstock and erect, square, winged stems, smooth below, 2 to 4 feet high. The leaves are opposite, oblong-lanceolate, with cordate base and crenate-serrate margins. The flower is two-lipped, green below and dark purple in its upper portion, the corolla tube bulging.

KNOTTED FIGWORT (*S. nodosa* L.) grows in somewhat drier situations. It has a tuberous knotted rootstock, and leaves with doubly serrate margins, the serrations at the base being much larger than those on the upper part of the leaves.

SPEEDWELLS.—Belonging also to this order are Water Speedwell (*Veronica Anagallis* L.) and Brooklime (*V. Beccabunga* L.), two weeds frequently found in ditches and watery places. The former has stout, erect, smooth stems, which are succulent and hollow, and one to two feet high; below are creeping stolons. The leaves are lanceolate-serrate, sessile, and partly clasping the stem. The flowers have a pale lilac corolla, and are in long racemes.

Brooklime has procumbent stems, which take root at the joints, and stalked ovate leaves. The flowers are smaller than those of the previous species, and are sometimes bright blue or pink.

LABIATÆ.

Belonging to this order are the Mints, several species of which are abundant in wet places by rivers and ponds. They have subterranean creeping rhizomes, and spread very rapidly, often tending to block up ditches and prevent free movement of water.

CAPITATE MINT (*Mentha aquatica* L.) is perhaps the commonest of such species. It has stems 12 to 18 inches high, with stalked ovate or cordate woolly leaves, and somewhat dense spikes of lilac labiate flowers.

FIELD OR CORN MINT (*Mentha arvensis* L.) is in some districts one of the worst arable-land weeds on damp, badly drained land (Fig. 7).

SKULL-CAP (*Scutellaria galericulata* L.) is another Labiate common on the banks of streams and in ditches. It grows from 6 to 12 inches high, has oblong-lanceolate leaves with serrated or crenated margins, and blue labiate flowers two-thirds of an inch long, placed singly in the axils of the leaves on opposite sides of the stems.

MARSH WOUNDWORT (*Stachys palustris* L.) is very common in similar situations to the last species. It has spikes of dull purple labiate flowers. The rootstock creeps extensively, and from it grow upright stems $1\frac{1}{2}$ to 2 feet high, with somewhat narrow ovate-lanceolate and almost sessile leaves.

POLYGONACEÆ.

GREAT WATER-DOCK (*Rumex Hydrolapathum* Huds.) is a widely distributed and characteristic river-side plant, and the largest of the British docks. The stems are stout, branched, and 3 to 5 feet high, with oblong-lanceolate leaves which are cordate at the base, and sometimes more than a foot long. The flowering panicle is leafless, with crowded whorls of flowers.

CERATOPHYLLACEÆ.

HORNWORT (*Ceratophyllum demersum* L.) is a locally distributed aquatic plant, completely submerged in the water of ponds and ditches. It possesses long slender stems and leaves in whorls (Fig. 8). The leaves are usually dark green, much divided into narrow, toothed segments, and about an inch long. The flowers are small and monœcious, with many stamens, and one-celled ovary.

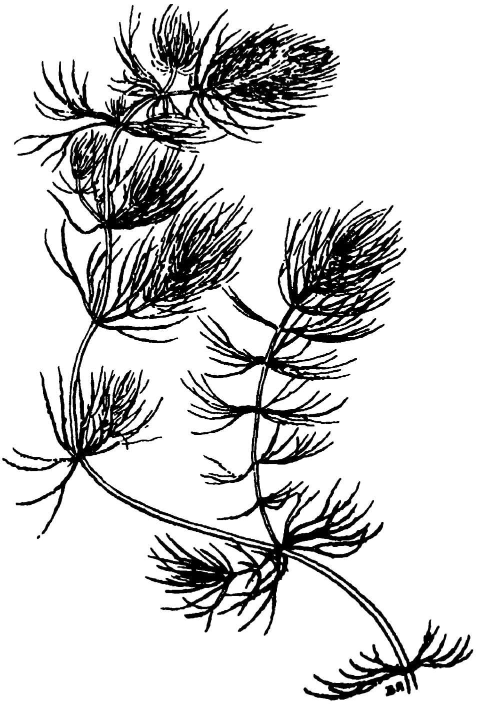

FIG. 8.—Hornwort (*Ceratophyllum demersum* L.), × 2½.

HYDROCHARIDACEÆ.

WATER-THYME: CANADIAN PONDWEED (*Elodea canadensis* Michx. *Anacharis Alsinastrum* Bab.) is an introduced aquatic weed, native of North America. The plant (Fig. 9) is a fresh green colour, is semi-transparent, and has completely submerged, slender branched stems, which bear whorls of three or four lanceolate-serrated leaves at short intervals. The stems are brittle, and often 3 or 4 feet long; when broken in pieces, each piece is capable of developing roots at the joints, so enabling it to attach itself to the mud at the bottom of the pond or stream, where it grows very rapidly into a new branching plant. In its native country Water-thyme is diœcious,* and produces small, one-seeded capsules. In Britain, only male plants have been found, and these only in one or two localities. It spreads vegetatively, at an exceedingly rapid rate, by means of broken pieces of stem when introduced into ponds and slow-moving streams.

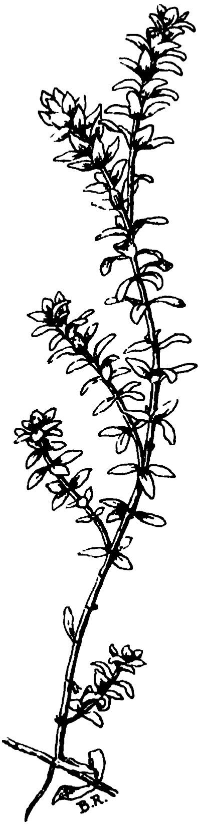

FIG. 9.—Canadian Pondweed (*Elodea canadensis* Michx.), × ⅔.

It appears to have been introduced into the North of Ireland about 1836, and into England about five years later. From that time to the present it has made its way into all parts of the country, and has become a constant source of trouble by blocking up canals and streams. River and canal navigation is impeded by its presence, and it seriously interferes with angling in lakes and slow-moving rivers.

In certain seasons it becomes rampant, spreading its long tangled stems through the water in all directions. For a period of three or four years afterwards it frequently dies down, probably owing to exhaustion of the nutritive materials of the mud and water, and then is only seen as a green carpet on the bed of the lake or stream.

It is a nutritious green food for horses and cattle when fresh.

ORCHIDACEÆ.

The SPOTTED ORCHIS (*Orchis maculata* L.) occurs largely in damp meadows and indicates lack of efficient drainage.

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* Male and female flowers on separate plants

IRIDACEÆ.

FLAG OR YELLOW IRIS (*Iris Pseud-acorus* L.).—This well-known handsome plant, with its large yellow flowers, is common in wet ditches and by the margins of streams and lakes where the water is not more than 12 to 18 inches deep. It has stout, creeping rootstocks on the mud below, and from them are sent up round stems and sword-shaped leaves. The flowers appear usually from June to August. The plant is propagated by means of its rootstock and its flat seeds, which are produced in numbers in large three-celled capsules.

ALISMACEÆ.

WATER PLANTAIN (*Alisma Plantago* L.) is a common inhabitant of ditches and the edges of streams. The stems are fleshy, with a swollen base from which spring up long-stalked erect leaves (Fig. 10). The submerged floating leaves are linear, those which come above the water having long lanceolate blades (6 to 8 inches long) with a cordate base. The flowers, which are seen from June to August, are pale pink, with six perianth segments, and are arranged in an erect panicle.

ARROW-HEAD (*Sagittaria sagittifolia* L.) is another species of this order less common than Water Plantain but met with in similar positions in water. It has peculiar creeping stoloniferous stems, the branches of which end in small tubers about half an inch in diameter. The sub-aerial leaves are characteristically arrow-shaped, hence the popular name of the plant.

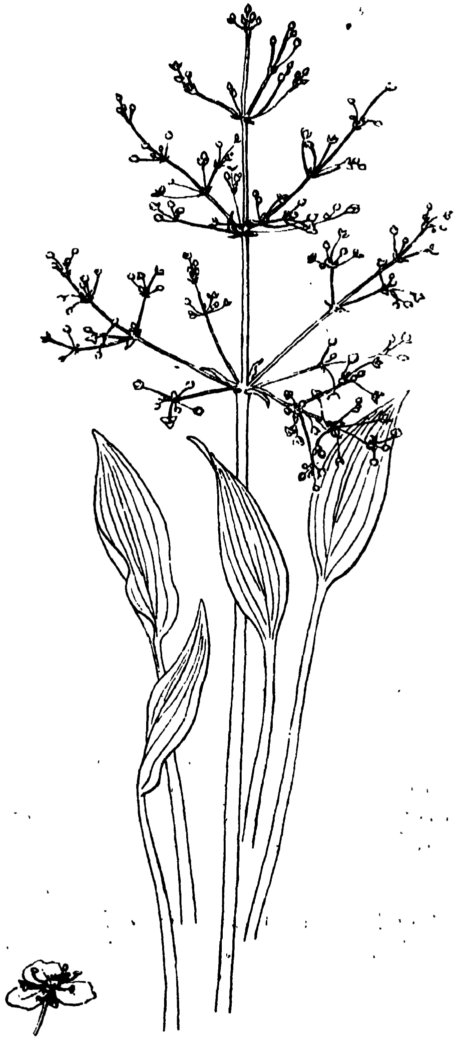

FIG. 10.—Water Plantain (*Alisma Plantago* L.). × ⅔, with flower enlarged.

The leaves in the water consist of narrow petioles without leaf-blades.

The unisexual flowers have white petals, and are arranged in whorls; the upper are male, and the lower female.

NAIADACEÆ.

PONDWEED.—The term " pondweed " is applied in a restricted sense to representatives of the genus *Potamogeton*. A large number of species are known, some of them with floating leaves, others with submerged leaves only. The majority are inhabitants of water from 12 to 24 feet deep.

The flowers are arranged in terminal or axillary spikes: they are small, with four greenish perianth segments, four stamens, and an ovary of four carpels, which ripen into small drupes, each containing a single seed.

The species perhaps most frequently met with are :—

Potamogeton natans L. (Fig. 11), with floating, leathery, elliptic or ovate leaf-blades and long alternate petioles, some of which remain under water and develop no blade.

P. polygonifolius Pourr. somewhat resembles *P. natans*, but has narrower floating leaf-blades, and lanceolate submerged blades also.

P. heterophyllus Schreb. has flowering stems with many barren branches, elliptical floating leaves and narrow lanceolate submerged leaves. The stem of the flower spike is thicker in the upper part than in the lower. The following species have submerged leaves only :—

P. lucens L. is common in deeper ponds, lakes, and canals. The leaves are 4 to 10 inches long, ovate or lanceolate, and translucent.

P. perfoliatus L. is a smaller species, with round stems and translucent ovate leaves 1 to 3 inches long, which clasp round the stems.

P. crispus L. (Fig. 11) has long flattened stems, on which are arranged, usually in two opposite rows, somewhat narrow oblong leaves 1 to 3 inches long, the margins of which are crisped or wavy.

P. densus L. has opposite elliptic-lanceolate short leaves, ½ to 1 inch long, arranged very closely together in two rows on the brittle stems. It is sometimes a nuisance to growers of watercress.

P. pusillus L. is a smaller submerged species, with thin stems, and very narrow acute leaves.

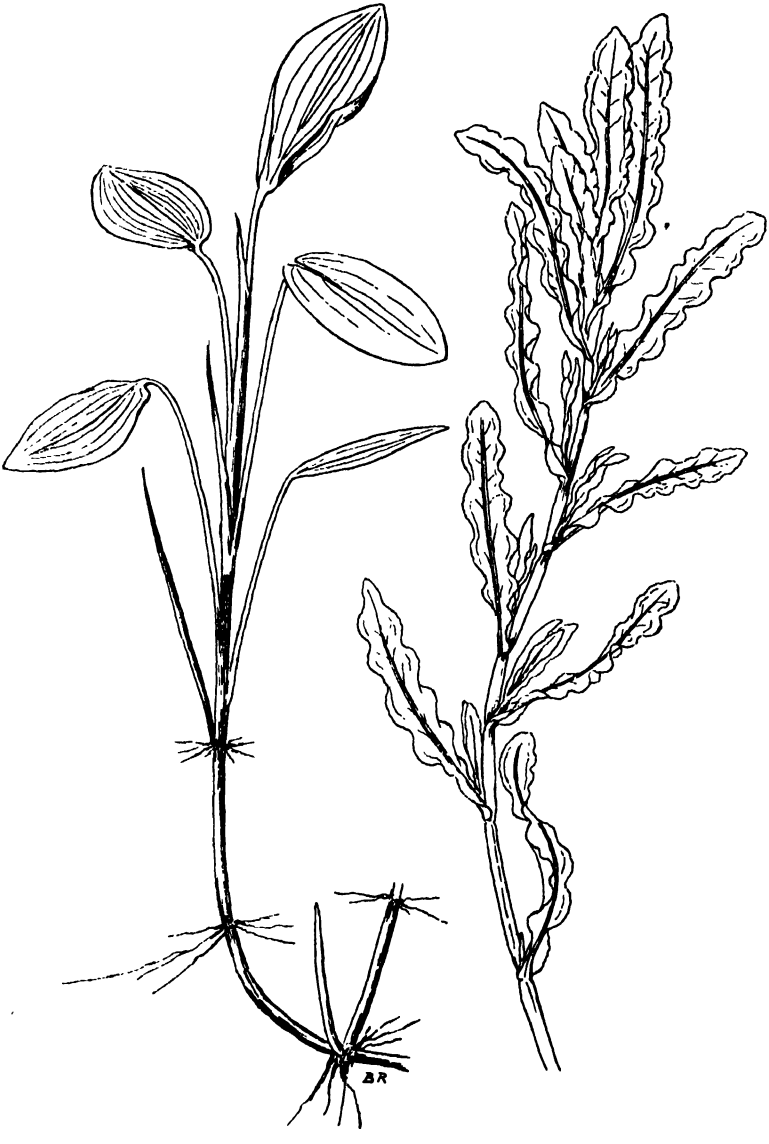

FIG. 11.—Left : Floating Pondweed (*Potomogeton natans* L.). Right : Curly Pondweed (*P. crispus* L.). Both × ⅔.

LILIACEÆ.

RAMSONS, or BROAD-LEAVED GARLIC (*Allium ursinum* L.) commonly occurs in moist, shady places, and near the sides of streams; it is perennial, about 1 foot high, with flat, broad ovate-lanceolate leaves, stems triangular in section, and umbels of white star-like flowers which appear from May to June. It taints the milk of cows which eat it.

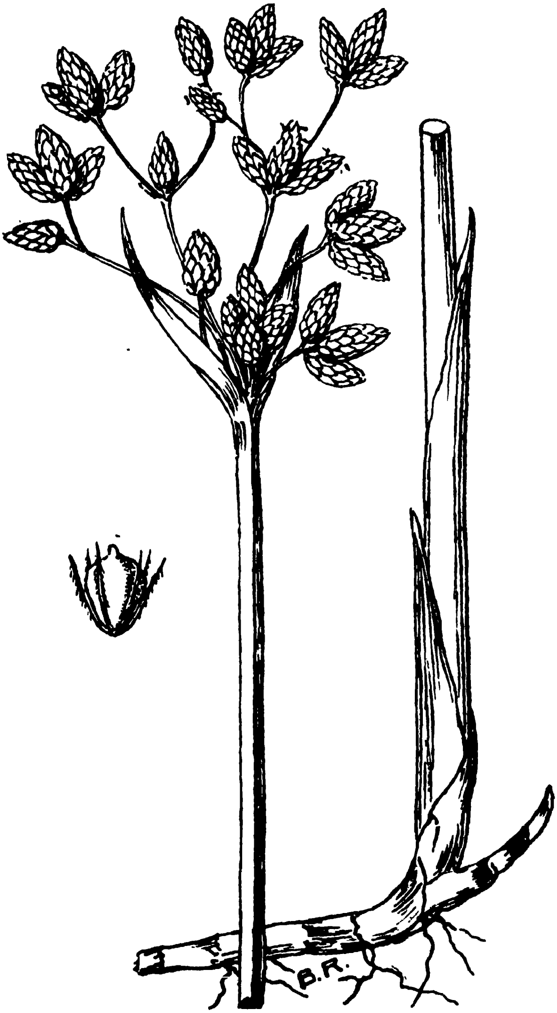

FIG. 12.—Club-rush (*Scirpus lacustris* L.), nat. size.

JUNCACEÆ.

COMMON RUSHES (*Juncus sp.*), usually perennial, are liable to occur in great quantity in water meadows and similar damp situations. They have a creeping rootstock, simple pointed stems containing pith, and leaves somewhat resembling the stems; the small star-like flowers are greenish to brown, and occur in clusters springing from the leaf axils or terminally on the stem. The rootstock is deep-seated; even when the surface of the ground appears to be dry, the presence of rushes indicates a wet subsoil and lack of drainage.

CYPERACEÆ.

This order includes a large number of species of plants, many of which are common inhabitants of river-banks, lakes, ditches, and marshy places, and usually spoken of as Rushes and Sedges. One or two only need be mentioned here.

BULRUSH, CLUB-RUSH (*Scirpus lacustris* L.) is often met with in shallow water on the edges of ponds and slow-moving streams. It has an extensive creeping rootstock, tall green stems, usually leafless, 4 to 6 feet high, and half to three-quarters of an inch thick, with a spongy interior. Occasionally in running water flat floating leaves are present. The inflorescences are terminal, reddish-brown clusters or cymes (Fig. 12). (See Reed-mace, p. 49).

S. Tabernaemontani Gmel. is a sub-species of the above, with glaucous stems.

COTTON GRASSES (*Eriophorum* sp.) are perennial plants which sometimes occur plentifully in water meadows, damp low-lying pastures, and marshy land. They are readily recognised in late summer by the dense cottony tufts or heads of hairs forming the floral envelope, the " cotton " being sometimes collected for stuffing pillows.

SEDGES.—Many of these plants are found in marshes and ditches and on the margins of ponds and rivers. They much resemble grasses in general appearance, but the stems are usually triangular in section, and the leaf-sheaths are entire, not split, as in most grasses. The flowers are unisexual and in spikes; the male flowers have three stamens and no perianth; the female flowers have a peculiar bottle-shaped perianth, in which is the ovary, with its two or three projecting stigmas. The fruit is a small, three-angled nut.

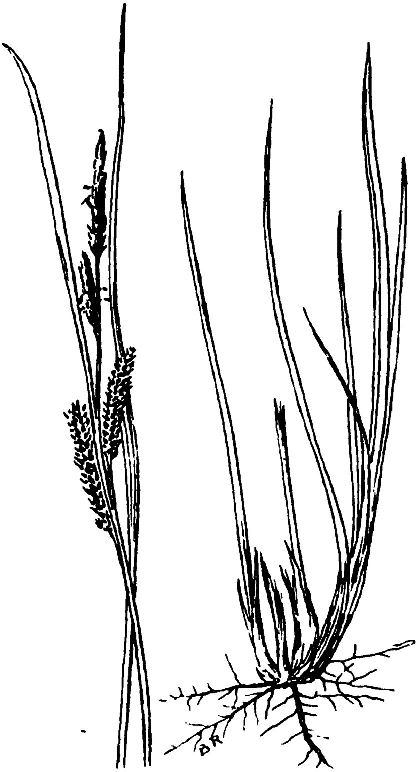

FIG. 13 —Sedge (*Carex vulgaris* Fries.), × ⅔.

Common species which may be described as weeds of the margins of ponds, river-banks, and ditches are *Carex ampullacea* Good., *C. vesicaria* L., *C. paludosa* Good., and *C. riparia* Curt. These grow from 1 to 3 feet high, with broad, grass-like leaves, and have creeping or tufted rootstocks.

Carex vulgaris Fries. (Fig. 13) commonly occurs in water meadows, damp meadows and marshy land, as do other species.

LEMNACEÆ.

DUCKWEED (*Lemna minor* L.).—This is a familiar palish green minute plant which is often seen completely covering the surface of small ponds. It is abundant in ditches and backwaters of many rivers and streams, and is troublesome in watercress beds. Each plant floats on the water, and consists of one or two flattened scale-like "fronds" an eight of an inch or so in diameter. (Fig. 14). From the under part a delicate root about ½ to 1 inch long dips into the water. Very minute unisexual flowers arise on the "fronds," and these produce seeds which propagate the plant. Multiplication, however, goes on most rapidly by vegetative budding off of young fronds, which become disconnected from the parent and then carry on an independent life, the process being repeated.

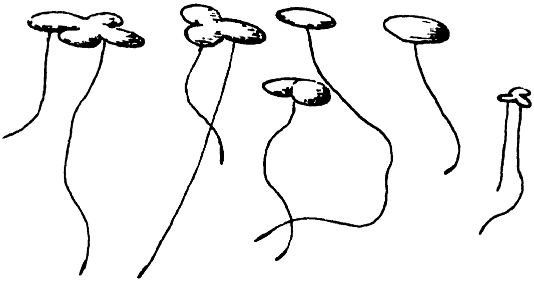

FIG. 14.—Lesser Duckweed (*Lemna minor* L.). nat. size.

Another larger species (*L. trisulca* L.), with fronds half to three-quarters of an inch across, the young ones of which grow out at right angles to the older ones, is common also in many places on stagnant water.

A less frequent species is *L. polyrhiza* L., with several roots to each plant, instead of one.

TYPHACEÆ.

BUR-REED (*Sparganium ramosum* Huds.) is a frequent inhabitant of ditches and the banks of ponds and rivers. The erect stems rise to a height of about 2 feet, and bear long, narrow leaves (2 to 3 feet long and about ½ to 1 inch broad) three-angled at their base. The flowering stem is branched, and the unisexual flowers are arranged in round heads, or "burs," about an inch in diameter.

S. simplex is another fairly common species resembling the above, but with simple instead of branched flowering stems, and often having narrow floating leaves.

CLUB-RUSH : "Bulrush," Reed-mace (*Typha latifolia* L.) is a common water plant, with dark, rich brown spikes, in shape somewhat like a lamp brush. The plant, with its tall stems, is common in ponds and ditches, and on the margins of lakes and rivers : it needs no further description. (See *Scirpus lacustris*, p. 46).

GRAMINEÆ.

THE REED (*Phragmites communis* Trin.) is a grass which occurs in shallow water at the edges of lakes and streams and in ditches throughout the country. It is useful for bedding of animals and for thatching. The rootstock is much branched, often forming a dense, mat-like growth under water, some of the rhizomes extending 20 or 30 feet. The erect stems are round, 6 to 10 feet high, with broad flat leaves usually about an inch wide, and of ashy-green colour beneath. The panicle is diffuse, 6 to 12 inches long, with purple, shining, three to six-flowered spikelets.

TUSSOCK GRASS, or TUFTED HAIR-GRASS (*Aira caespitosa* L.), the dense tufts of which are often termed "bull pates," or "bull faces," is common in many damp meadows and pastures. It is perennial, 2 to 4 feet high, with tall, nodding panicles of flowers, which appear in June and July. The flat leaves, which are very rough with sharp edges, are refused by stock.

FLOATING FOXTAIL (*Alopecurus geniculatus* L.) is a perennial grass sometimes plentiful in ditches and near ponds, and in damp or wet meadows ; it sometimes grows so profusely as to choke up a shallow pond. The procumbent stems root at the nodes, flowering takes place from May to August, and the plant attains a height of two feet. The panicles resemble those of meadow foxtail, but are more slender.

EQUISETACEÆ.

HORSE-TAILS.—All the representatives of this order are adapted for life in wet places. One species, *Equisetum limosum* L., is commonly met with in about 2 or 3 feet of water along the edges of lakes and in ditches. The smooth stems grow from 1 to 3 feet high, sometimes with short, simple branches in whorls. The terminal spore-bearing spike or cone is short and blunt.

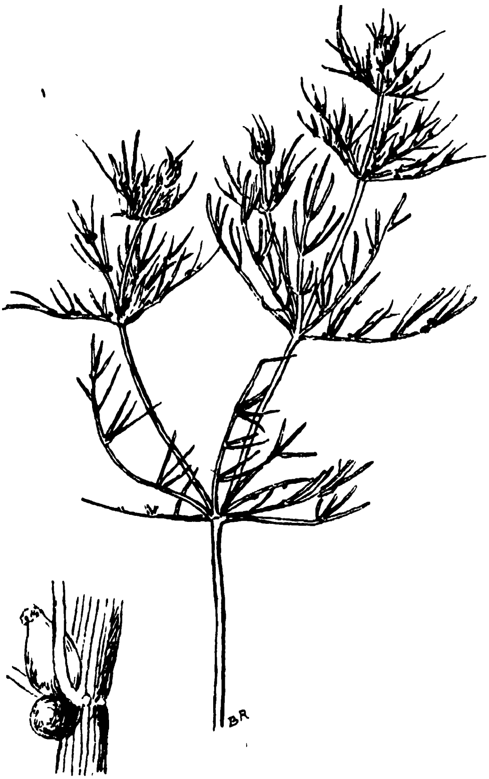

FIG. 15.—Stonewort (*Chara vulgaris* L.), nat. size, with reproductive organs magnified.

CHARACEÆ.

Various species of Stoneworts (*Chara* and *Nitella*) are lowly botanical forms with a complicated floral structure. They may have simple or branched stems up to 1 foot long, according to species. Cylindrical branches in whorls are produced at the nodes (Fig. 15). The Stoneworts grow in brackish or fresh water, and are attached to the mud at the bottom, sometimes covering large areas with vegetation. They are not usually troublesome.

MUSCI.

MOSSES (*Sphagnum*, *Hypnum*, *Funaria*, etc.) frequently occur in damp meadows and pastures.

DESTRUCTION OF WATER-LOVING WEEDS.

1. The opportunities for the destruction of water-loving weeds, and the methods which can be employed for diminishing them, are few compared with those available in the case of ordinary weeds of gardens and fields. When abundant in ditches they should be cut with the scythe or hook or pulled up by hand, and their removal should be arranged and repeated so that at all times of the year

the water has a free passage, and is not forced back or kept in a stagnant state to the detriment of adjoining cultivated land or pasture. To this end also, ditches should be regularly cleaned out and trimmed, the débris being distributed evenly along the banks.

Along the margins of ponds, lakes and rivers also the weeds are best cut down with the scythe when the water is low, or from a boat when wading is not feasible.

In dealing with the question of cutting weeds in rivers and lakes kept for fishing, or for the attraction of water-fowl, it must be remembered that if weeds are cleared away completely, the natural cover, and to some extent the spawning beds of fish, are destroyed or damaged. Water plants provide food and shelter for thousands of insects and their larvæ upon which fish and water-fowl largely feed, and their reduction involves much detriment to the sporting value of the water. Cutting should therefore be carried out with judgment, patches being left untouched for a time, and cut later when areas previously mown have somewhat recovered.

The operation of cutting weeds in ponds and streams is managed in various ways. A hand-power machine for use with a boat or punt is illustrated in Fig. 16, the weed-cutter consisting of V-shaped scolloped saws dragged along the bottom at the end of an oscillating and hinged arm. The same kind of cutter may be used with motive power in a punt or boat, which may be of a considerable size and cost a large sum of money. A motor punt weed-cutter is illustrated in Fig. 17.

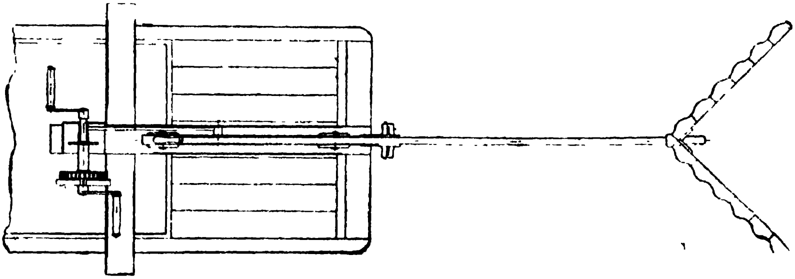

FIG. 16.—Hand-power Machine for fixing to Boats or Punts, which may be rowed by oars or towed from the bank by ropes. The cutting is performed by the V-shaped scolloped saws suspended from an oscillating hinged arm. A similar V-shaped weed-cutter on a long handle is useful for hand work from the bank, boat or punt. (Crossley, Bedford).

Scythe blades may be attached to ropes which can be dragged through the weeds from a boat, or from opposite banks of the river or stream when not too wide.

An excellent weed-cutting saw is illustrated in Fig. 18. This is a long flexible blade with saw-like teeth, which quickly severs the stems of water weeds.

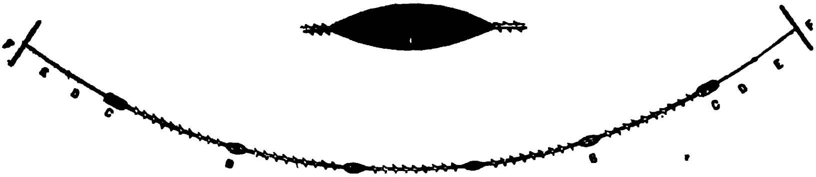

FIG. 18.—Ziemsen's Weed-cutting Saw: A, the saw-like teeth; B, torpedo-shaped sinkers; C, clamp; D, wire; E, rope; F, handle.

There are also other appliances for cutting water weeds, such as the "Dreadnought" for rivers and canals, and the "Simplex" for lakes and ponds, made by the Dreadnought Casting Steel Co., Ltd., Newport, Isle of Wight.

In shallow and wide streams weeds are often cut by men who wade in the water and use hand scythes.

As far as possible the cut weeds should be removed from the river, and not sent down stream to be a trouble and annoyance to neighbours below.

2. In addition to cutting weeds by means of different tools, some of them may be kept down to a certain extent by swans. These birds nip off the young tops among water plants, and check their rampant growth, as in the case of *Elodea canadensis.* The lake in the gardens of the Royal Botanic Society, Regents Park, was formerly kept free from water plants, saving lilies and flags, by swans; on the departure of these birds it became infested with *Potamogeton crispus*, *Elodea canadensis*, *Lemna minor*, and *Confervae* or "Blanket" weed. The re-introduction of swans was not successful in clearing the weeds, largely perhaps, because the "Blanket" weed was a trouble to them. *Lemna minor*, however, disappeared when ducks were introduced, and the "Blanket" weed lost much of its original vigour.

3. For the destruction of floating slimy "scum," particularly in fresh-water lakes, copper sulphate has been used with success. This substance in exceedingly minute amounts kills Desmids and many microscopic green and brown slimy algæ composing the "scum." (One part in a million is sufficient to destroy the growth, and does not harm fish nor prevent the water from being used for drinking purposes.)

One and a half ounces of copper sulphate dissolved in two gallons of water and applied as a spray to the " slime " on the surface of water has been found to destroy it. A second spraying a week later makes success more certain.

Ponds and lakes have been cleared of slimy algæ also by placing copper sulphate in a sack and towing it up and down in the water from the end of a boat. About 1 lb. of the chemical per 125,000 gallons of water in the pond has been found suitable for the work. The amount of water in the pond can be calculated with sufficient accuracy by multiplying the average length, breadth, and depth in feet together, and multiplying this product by 6¼ (the approximate number of gallons in a cubic foot).

4. The weeds of watercress beds must be dug out or constantly pulled up by hand.

5. As already indicated earlier in this article, the clearing of streams always has a good effect in reducing field weeds generally, but drainage and liming of the fields themselves bring about striking improvement in the kind and feeding-quality of the herbage. When this work is done, the cutting over of the weeds from time to time to prevent seeding, weaken them, and bring about earlier reduction, is also recommended. Thereafter, to maintain the improvement secured, the water channels must be kept open and sound ; and judicious manurial treatment and grazing with stock, as well as good cultivation of the arable land, must be continued.

IV.—FRUIT PESTS AND WINTER CONTROL MEASURES.

By Herbert W. Miles, M.Sc. (Bristol), N.D.A., C.D.A. (Hons.).

" All kinds of caterpillars which eat the greene and blossomes of the tree doe hurt them very much so that thereafter may come no fruit. Therefore their eggs which lie hidden as it were in a cobwebbe must be diligently searched and burned from the boughs." —" *The Orchard and Garden,*" 1620.

As the above extract indicates, pest control in orchards has received earnest consideration for upwards of three centuries, and each year more is added to our knowledge of orchard pests and their control. Fruit growers' associations are advertising British fruit, and the demand for home grown fruit of a high quality is increasing. Thus the problem facing the grower is how to increase his yield of first class fruit. This he can do by growing better and heavier yielding varieties, by using suitable stocks, by judicious manuring, careful pruning, and the adoption of the best cultural methods. But these are not enough ! Crops may be destroyed or much reduced in value by the ravages of insect pests and fungus diseases. Therefore, in order to procure high yields of good clean fruit it is essential to adopt suitable measures of pest control.

Insect pests have undoubtedly increased in intensity during the last century, and various explanations as to the causes have been offered. Each family of plants has its characteristic insect enemies ; consequently when man intensively cultivates plants closely allied to wild plants in the vicinity the pests migrate to the cultivated plants where food in abundance is found. Cultivation upsets the balance of nature, and where certain types of plants are grown to the exclusion of others the pests which feed on them increase with remarkable rapidity. Pests are also spread from one district to another on nursery stock and occasionally, owing to favourable conditions and the absence of special natural enemies, become a more serious scourge in the new locality than they were in their previous surroundings. Changes in the character of agriculture have an important bearing, both directly and indirectly, on insect life. In the Holland Division of Lincolnshire the development of intensive agriculture has led to the cutting down of trees and hedges and the consequent migration of many insectivorous birds owing to lack of shelter. This, together with the establishment of the Little Owl, which often destroys the young of smaller birds, has considerably reduced the natural enemies of fruit pests, and losses caused by insect ravages have greatly increased. Finally, indiscriminate spraying has an effect on insect life, for, where mixed sprays are used as a matter of routine, friends and foes are alike destroyed. When such spraying is discontinued, the multiplication of noxious insects is very rapid owing to the dearth of parasites which would otherwise have kept the pests in check.

Where no effort is made to control pests in fruit plantations annual losses are very heavy, for the pests, by feeding on the trees, deprive them of energy which should be used in the production of fruit ; and by marking otherwise good, sound fruit, pests reduce the value of the crop which can be marketed. Though a good crop may be borne from time to time under such conditions, the average yield is low and the proportion of first grade fruit exceedingly small. This can be readily accounted for ; during 1920 and 1921 the Ministry of Agriculture record (1) thirty-six different kinds of insect attacking apples, twenty attacking pears, twenty-one attacking plums and damsons, seventeen attacking gooseberries and currants, eight attacking raspberries and loganberries, and twelve attacking strawberries. With such a formidable record of insect enemies of fruit plantations, it is not surprising that measures aiming at pest control must be carried out in order to increase the yields of first grade fruit.

TYPES OF FRUIT PLANTATION IN RELATION TO PEST CONTROL.

The type of fruit plantation varies with the character of the soil and climate, the proximity of markets, the prevailing type of agriculture in the district, and the inclination of the grower. Thus there are grass orchards in Gloucestershire and Somerset, more or less devoted to the production of apples and pears, often for cider purposes only ; these orchards are usually situated near the farmsteads and are used for grazing young stock which frequently receive more attention than the fruit trees. In Worcestershire and Herefordshire both grass and arable orchards occur, mixed fruit plantations are common, and a considerable acreage is devoted to plums. In Kent and East Anglia mixed fruit planations also occur but with fewer plums and more pears, and often with strawberries grown in the bays between the fruit trees or in separate plantations.

Grass Orchards.—The grass orchards of the West of England are often exceedingly picturesque, but unfortunately they afford shelter to vast hordes of insect enemies. The gnarled, rough tree trunks, frequently overgrown with moss and lichen, furnish suitable hibernation sites for numbers of injurious insects. In January and February, 1921, the writer examined some typical old, West of England apple trees growing in Somerset, and found about the bark and decaying branches (2) no less than twenty-eight different species of beetles and weevils, of which eighteen were known to be harmful. The high hedges of hawthorn, blackthorn and myrobolan, which often surround these orchards afford food and shelter for many insects which may migrate to the fruit trees and do serious damage. Lefroy (3) listed twenty-two species of insects, known to be fruit pests, which feed on hawthorn. Closely interwoven branches, typical of old cider orchards, permit insect attack to develop for some time unobserved and, should insecticidal sprays be applied, do much to impair their efficiency. The undisturbed grass at the roots of the trees is especially favourable for those pests which spend some part of their life cycle in the soil. On examining the soil of fruit planations in the winter of 1922-23 the writer found thirty-three species of insects, twenty of which were injurious. The application of sprays is a hazardous proceeding in grass orchards, for the grass beneath the trees may become contaminated with poison, and grease-banding is frequently rendered ineffective by grazing animals which rub off the grease.

Arable Plantations.—Arable plantations vary considerably. There are mixed fruit plantations containing top fruits and bush fruits, frequently with strawberries or market garden crops between the trees and bushes. Other plantations are devoted to mixed top fruits, and some to one type of top fruit only. In some localities bush fruits—currants, gooseberries, raspberries, and loganberries—occupy the entire plantation, and large acreages have been given over solely to the cultivation of strawberries.

Mixed plantations containing top fruits on late maturing stocks, " fillers " on early maturing stocks, rows of currants and gooseberries between the trees, and frequently strawberries or market garden crops between the bushes, offer special difficulties in connection with pest control. The frequent cultivation of the ground tends to reduce the numbers of insects which find food or shelter in the ground ; but the variety of fruits, their different stages of growth and development, and their varying degrees of susceptibility to damage by spray materials renders the treatment of insects about the trees and bushes a complicated problem. Thus caustic winter sprays suitable for top fruits and bushes frequently damage strawberries or other crops beneath the trees, while arsenate or other poisonous washes applied to the trees after the setting of top fruit may contaminate the bottom fruit at a time when it is almost ready for marketing. Where the top fruits are mixed further difficulty arises, for sprays suitable for apples may be injurious to pears and plums which develop earlier in the season. Therefore in this type of orchard, where so many contending factors have to be considered, the measures for keeping pests in check are necessarily limited.

Pest control in arable plantations devoted to a single type of fruit, whether top fruit, bush fruit, or strawberries, is much simpler than in mixed plantations. The ground can be well worked at frequent intervals, thus minimising attack by those pests which spend part of their lives in the soil ; spraying can be done at the most suitable time when there is only one crop to consider ; and cultural and hygienic measures can be more easily carried out in plantations containing only one type of fruit. In such plantations the grower derives the maximum amount of benefit from all cultural operations.

ADVANTAGES OF WINTER TREATMENT FOR PEST CONTROL.

A variety of conditions render the winter season a suitable time for carrying out measures aiming at pest control in fruit plantations. In the first place, labour is generally cheaper and more easily available than it is at any other season, and the grower, unencumbered by pressure of other work, has an opportunity of seeing that the operations are carried out in a thorough, efficient manner. Caustic washes with considerable insecticidal and bark cleansing properties can be employed at this period of the year, when the trees are dormant and the buds are well protected by their scale leaves. The absence of foliage renders it possible to reach all parts of the trees and bushes with spray fluids; and, moreover, the overwintering insects are usually stationary and their lowered vitality makes them more readily susceptible to the action of insecticides.

SITE AND STAGE OF FRUIT PLANTATION PESTS DURING THE WINTER

Insects may hibernate as eggs, larvae, pupae or adults, and the site of their overwintering depends to a considerable extent upon the stage at which hibernation occurs. Thus eggs are usually found in such situations that when the young hatch they are within easy reach of the food that is to give them sustenance. Immature larvae, except in one or two species of "looper," usually hibernate where they are sheltered naturally or where they can construct cocoons to protect themselves from winter conditions; since these larvae are usually partially grown, as in the case of caterpillars of the Gold Tail Moth (*Porthesia similis*) and the Magpie Moth (*Abraxas grossulariata*), they can travel some distance to shelter if none is available in the proximity of the food supply. The site of overwintering of mature larvae, like those of the Codlin Moth (*Cydia pomonella*) and of pupae is not necessarily near either the food of the larvae or the site of future egg-laying of the adult; for frequently on emergence the adult insect is not dependent on the food which was devoured by the larvae, and is able to reach places suitable for the location of eggs by crawling as do the wingless females of the Winter Moth (*Cheimatobia brumata*) and its allies, or by flying as do the winged insects like the Codlin Moth. Overwintering adults, because of their means of locomotion, may be found farthest removed of all the stages from the food of the larvae: they are not usually restricted to the immediate vicinity of the fruit plantation, but may be found at some distance, though generally within easy reach of it.

The pests of fruit plantations commonly occur in three sites during the winter ; about the trees, either in or on the young shoots and branches, or about the rough bark of the trunk and the main branches ; in the soil at the roots of the trees and bushes ; and among weeds, coarse grass, rubbish, crop residues, hedge bottoms and similar shelters about and near the plantation. It is by no means uncommon to find insects of the same species hibernating in more than one of these sites.

INSECTS OVERWINTERING ABOUT THE TREES AND BUSHES.

A number of serious pests may be found in the egg stage about the trees and bushes during the winter months. Examination of twigs of apple, plum, damson, gooseberry and currant and the undersides of the leaves of strawberries frequently reveals the presence of the shining black, elliptical eggs of various species of aphids. Those clustered in the pubescence of the young growth of apples, particularly on water sprouts where they are sometimes so numerous as to darken the appearance of the shoot, are the eggs of the Permanent Apple Aphis, *Aphis pomi*, De G., a pest which attacks the succulent growth, frequently stunting and often destroying the young shoots ; those aphis eggs scattered singly or in twos about the fruit spurs may be the eggs (Fig. 1) of the Rosy Apple Aphis, *Aphis sorbi*, Kalt.. which causes extensive damage to the fruit, or of the Oat Apple Aphis, *Aphis prunifoliae* Fitch., a less injurious insect. The aphis eggs found on the young shoots of plums may be those of the Leaf-curling Plum Aphis, *Aphis prunina*, Walk., or the Mealy Plum Aphis, *Hyalopterus pruni*, Fabr. ; while those about the damson twigs are usually the eggs of the Hop Damson Aphis, *Phorodon humuli*, Shrank, a pest of both hops and damsons which winters on the latter. A number of varieties of aphids pass the winter as eggs about gooseberry and currant bushes, the chief being the Gooseberry Aphis, *Aphis grossulariae*, Kalt., and *Capitophorus ribis*, L., the Currant Aphis, which causes the familiar blistering of the leaves of gooseberry and currant. The Strawberry Aphis, *Capitophorus fragariae*, Theob., may be found during the winter as eggs on the under side of the foliage.

Numerous other eggs can also be found about the twigs of fruit trees. About the leaf scars of the fruit spurs of apples and pears, in the axils of the buds, and in the fine hairs of the young shoots may be found the eggs of the Apple Sucker, *Psylla mali*, Schmidb., a pest which does considerable damage to the developing blossom trusses. These eggs can be readily distinguished from those of aphids because of the difference in shape and colour. Sucker eggs are creamy white when laid, deepening to yellow and orange and finally rusty red just prior to hatching; and though elliptical, sucker eggs tend to be shorter and proportionally thicker than those of aphids. Red Spider eggs may be found widely distributed among the trees and bushes of fruit plantations during the winter season. These eggs bear no resemblance to either aphid or sucker eggs, but are minute, and reddish, and distinctly spherical in shape. They are laid in little clusters round the bases of the buds, in the pubescence of the young shoots and about the fruit spurs; and, when present in considerable numbers, give the twigs a reddish tinge. The Apple Capsid Bug, *Plesiocoris rugicollis*, Fall., deposits its egg in the bark of apple twigs, the tiny aperture made by the insect when laying its egg, closely resembling a lenticel. Occasionally, however, at Long Ashton in the winter of 1921-22 the writer found the long, curved, creamy, brown-capped eggs of the Capsid loosely clustered in the pubescence of the young shoots. The Scale insects, too, spend the winter as eggs on their respective hosts; the Mussel Scale, *Mytilaspis pomorum*, L., on apples; the Brown Scale, *Lecanium persicae*, Feb., on gooseberries and currants; and the Oyster Shell Scale, *Aspidiotus ostreaeformis*, Curt., on pears and plums. The small white eggs of these insects can be easily seen with a hand lens if the protecting cover formed by the dried body of the parent scale be removed from the bark.

Many of the moths whose caterpillars devour the foliage of fruit trees spend the winter as eggs about the trees. The Vapourer Moth, *Orgyia antiqua*, L., lays its eggs on the cocoon from which it emerged and on the leaf or twig to which the cocoon was attached. The cocoons covered with fawnish eggs, which are roughly spherical in shape and with a central depression on the upper surface (figure 2), may be found hanging on the trees after the leaves have fallen. The Winter Moth, *Cheimatobia brumata*, L., and the Mottled Umber Moth, *Hybernia defoliaria*, Cl., emerge from the soil in the late autumn, and the wingless females crawl up the trees to lay clusters of eggs, yellowish green at first and gradually becoming reddish, about the leaf scars and rough bark, on pruned surfaces and about moss and lichen growing on the trees.

Many of the species of Tortrix Moths, which attack fruit trees by spinning the leaves and flowers loosely together and feeding in the shelter thus formed, pass the winter as flat yellowish eggs, more or less circular in shape, placed about the twigs. The eggs of *Tortrix ribeana*, *T.*, *heparana*, and *T. rosana* are common in most plantations. The Strawberry Tortrix Moth, *Oxygrapha comariana*, Zell., lays its eggs on the stipules at the base of the strawberry plant and on the lower portion of leaf stalks, where they remain throughout the winter.

In order to obtain some idea of the numbers of insect pests hibernating as eggs about the fruit trees, the writer examined fifteen shoots of each of some common varieties of apples. The trees had been grease banded the previous autumn, thus eliminating the risk of serious attack by the Winter Moth and its allies. The following table summarises the results obtained :—

Length examined and Variety.	Red Spider.	Apple Sucker.	Aphis.	Capsid.	Scale.
King's Acre Pippin, 251″ ..	334	46	1	3	1
James Grieve, 140″	106	113	1	0	0
Charles Ross, 150″	15	19	0	1	1
Lord Hindlip, 177″	259	12	0	1	1
Cox's Orange Pippin, 271″ ..	159	89	2	0	0
Early Victoria, 220″	28	43	1	0	0
Bramley's Seedling, 165″ ..	35	88	50	0	0

Some insect pests spend the winter as larvae, pupae, or adults located in bark crevices, moss or lichen and other available shelter about the trees and bushes. The mature larva of the Codlin Moth, *Cydia pomonella*, L., a pinkish caterpillar with a brown head, about threequarters of an inch in length, usually selects a site about the bark of fruit trees, where it weaves a cocoon of silk and fragments of bark and remains stationary throughout the winter. In bark crevices, moss and the crotches of the lower branches may be found the adult Apple Blossom Weevils, *Anthonomus pomorum*, L. They are small snout beetles with elbowed antennae, greyish in colour with a lighter grey V-shaped mark across the elytra or wing cases (figure 3). The damage caused by this insect is the familiar "capped blossom," fairly common in fruit plantations throughout the country. Case Bearers, the larvae of moths of *Coleophora* spp., which, sheltered within a characteristic case feed on the foliage of fruit trees, hibernate in cracks and crevices about the trees, on the twigs or under the paper of grease bands. The Bud Moth, *Hedya ocellana*, Fab., closely allied to the leaf-eating Tortricids, spends the winter as a young larva in a silken cocoon, hidden about the buds so that in spring it can readily find its way to the developing buds on which it feeds. The Pith Moth, *Blastodacna atra*, Haw., also spends the winter as a minute larva either in the bark of apple twigs or, as the winter advances, within the twig feeding upon the pith of the young shoots. A pest which spends the winter as an active larva is the Raspberry Gall Fly, *Lasioptera rubi*, Shrank, which may be found feeding within the galls on raspberry canes and wild brambles. Various mites pass the winter about the trees and bushes: the adults of the Pear Leaf Blister Mite crowd together among the scales of the leaf buds; and the mites causing "Big Bud" disease of black currants assemble in vast numbers in the buds, often between one and two thousand in a single bud, and the irritation set up by their feeding causes the buds to swell much beyond the normal size. The Woolly Aphis or American Blight, *Eriosoma lanigera*, Htg., passes the winter on the roots, trunk and branches of apple trees. These aphids secrete a white waxy substance under which they feed, producing galled areas on the trees.

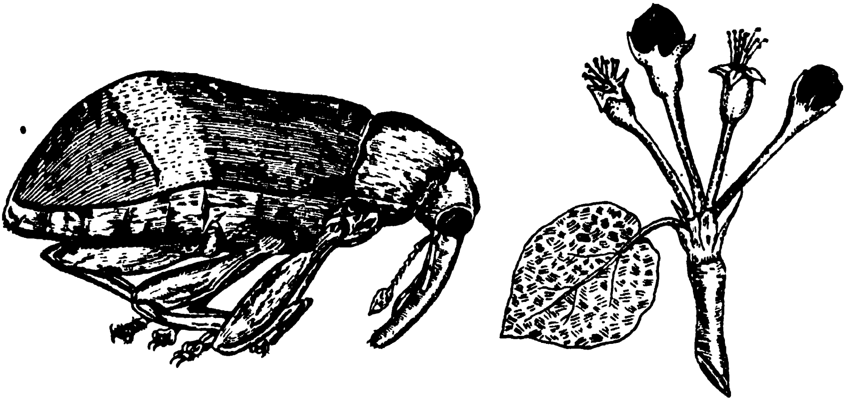

FIG. 3.—Apple Blossom Weevil (much enlarged) and (FIG. 3A) Apple Truss showing "capped" blossom.

Reproduced by courtesy of "The Fruit Grower."

INSECTS HIBERNATING IN THE SOIL.

Many pests of fruit plantations spend the winter in the soil, either as quiescent larvae or pupae in cocoons or earthen cells, or as active larvae feeding usually at the roots of the plants. The March Moth, *Anisopteryx aescularia*, Schiff., closely related to the Winter Moth, but appearing in spring, hibernates in a silken cocoon about two inches below the surface of the ground. The Apple

Sawfly. *Hoplocampa testudinea*, Htg., a pest which attacks the fruit somewhat in the manner of the Codlin Moth, hibernates in the soil as a mature larva in a yellowish cocoon. Two serious pests of pears pass the winter in the soil: the Pear Slug Worm, *Eriocampoides limacina*, Retz., a sawfly whose slimy, black or greenish, slug-like caterpillars devour the upper surfaces of the leaves of pear and cherry, enters the soil as a mature larva and constructs a cocoon in which it remains throughout the winter; and the Pear Midge, *Diplosis pyrivora*, Riley, whose maggots feed in the interior of the young fruit, passes the winter in a cocoon in the soil. The Raspberry Beetle, *Byturus tomentosus*, Fab., whose widespread attacks on raspberries and loganberries have in some instances threatened their continued cultivation, enters the soil about the crowns and remains there throughout the winter. The Gooseberry Sawfly, *Pteronus ribesii*, Scop., whose green and black caterpillars rapidly defoliate currant and gooseberry bushes, also spends the winter in a cocoon in the soil.

The larvae of a number of injurious insects feed during the winter in the soil of fruit plantations, often doing considerable damage. Cultivation, especially about strawberry beds, frequently discovers the grubs of the Leaf Eating Weevils, *Phyllobius* spp. and *Otiorrhynchus* spp., and those of the Small Strawberry Weevil, *Exomias araneiformis*, Schrank., which is a pest of strawberries during its larval and adult stages. These grubs are fleshy, wrinkled, and legless, with brown heads and white bodies; they feed at the roots of strawberry plants during the winter. Other persistent feeders at the roots of fruit trees and bushes, particularly strawberries and raspberries, are "white grubs," the larvae of the Cockchafer, *Melolontha vulgaris*, Fab., and the Dor Beetle, *Geotrupes spiniger*, Marsh, (4). These are large whitish grubs, about two inches in length when fully grown, and often having bodies so distended with fat that the tail end of the abdomen can only be dragged along on its side. Wireworms, the larvae of Click Beetles, *Agriotes* spp. and *Athous* sp., are occasionally troublesome at the roots of strawberries during the winter. They are slender, brownish yellow grubs with smooth, shiny skins and measure up to about an inch in length. Cutworms, the larvae of moths of *Agrotis* spp., which feed on vegetation near the ground level, are sometimes destructive among strawberries. The caterpillars vary in colour, being dark brown, greyish brown, greyish green, and greenish yellow; they usually feed at night on the leaves and stems of the plants, but sometimes attack the crowns and root stocks. The larvae of the Swift Moth, *Hepialis lupulinus*, L., may be an especially injurious pest in strawberry plantations. They are creamy white in colour, with brown head and legs, and during an attack on strawberries they devour the rootlets, tunnel into the main roots, occasionally as far as the crown, and in this manner destroy many plants. "Leather jackets," larvae of the Crane Fly or "Daddy-Long-Legs," *Tipula* spp., are commonly injurious in fruit plantations during the winter. They are greyish, earth-coloured, legless maggots, pointed towards the head and blunt towards the tail. They feed at the roots of strawberries, often coming up to devour the leaves at night ; frequently they damage the crowns of the raspberries and strawberries.

INSECTS HIBERNATING ABOUT THE PLANTATION.

Numerous pests already mentioned may hibernate in coarse grass and weeds, among rubbish, dead leaves and crop residues, in hedge bottoms, about stakes and palings, in crevices of walls and any other positions available about the plantation. Some of the pests of fruit generally choose such sites for shelter during the winter months.

The Strawberry Blossom Weevil, *Anthonomus rubi*, Herbst., which injures the strawberry blossom and prevents the setting of fruit, is a small, black weevil covered with dark greyish pubescence and having a long trunk bearing elbowed antennae. It hibernates as an adult among dead leaves and in rough bark, in hedge bottoms, and among rubbish and weeds. The Raspberry Moth, *Lampronia rubiella* Bjerk., a very serious pest of raspberries in that the young shoots are frequently destroyed as a result of its depredations, spends the winter as a tiny immature larva among weeds, rubbish and dead leaves where it weaves a protecting cocoon, about one-tenth of an inch in length, of pale greyish silk. This insect may also be found sheltering in the crowns of the plants, in cracks and crevices of the stakes and in the soil near the plants. Another pest which spends the winter as an immature larva sheltering among dead leaves, under rubbish, and in crevices about the food plants is the Magpie Moth, *Abraxas grossulariata*, L., the familiar black and white and yellow caterpillars of which devour the leaves of gooseberries, currants, plums, *Euonymus* and several species of wild *Prunus*. The Leaf Hoppers, *Typhlocybidae*, which attack the foliage of fruit trees, hibernate as mature insects, in hedge bottoms, rubbish, coarse grass, weeds, etc., about the plantation.

INSECT PESTS AND FRUIT BLEMISHES.

During the growing season it is of considerable value if the condition of the fruit as to cleanliness, shape, and freedom from blemishes is carefully noted, for the condition of the fruit gives important information regarding the pests present about the plantation. At harvest time, when the fruit is being graded and packed for marketing, blemishes are particularly noticeable and their occurrence does much to determine the amount of first grade fruit; therefore when outstanding blemishes are noted, the cause should be ascertained and some attempt made to eradicate the trouble before another growing season. The injury caused by certain insect pests of fruit is characteristic and the following is a brief account of the types most likely to be encountered.

A common and easily distinguished type of damage is that caused by leaf-eating caterpillars like those of the Winter Moth, Clouded Drab, and Mottled Umber. It consists of a winding green scar edged with brown scaly excrescences (as shown in figure 4). These scars, which are small at first, gradually enlarge with the development of the fruit and the brown corky edges become farther and farther apart.

Roughly circular or irregular green raised patches, edged and dotted with brown corky particles (as in figure 5), are caused by the Capsid Bug. When severely attacked the apples may be deformed and distorted and occasionally cracked. Though all varieties of apples are liable to damage by this pest, "Lord Derby" and "Allington Pippin" seem particularly susceptible, "Bramley's Seedling" suffering to a much less degree.

A more or less coloured, circular hole (figure 6) in the side of the fruit, giving access through a tunnel to the core of the fruit, is the characteristic damage of the Codlin Moth. Brownish frass often protrudes through the hole and a damaged fruit cut open shows a quantity of damp frass about the core, half eaten pips, and a smaller tunnel leading to the eye of the fruit where the caterpillar entered. Figure 7 shows the damage to the fruit with the larvae of the Codlin Moth *in situ*.

Figure 8 illustrates a type of injury which is becoming increasingly common in the east of England, and was especially severe in 1925. It is caused by the larva of a small moth allied to the Bud Moth, a species of *Argyresthia*. The small shallow holes are clustered together and often dusted over with a whitish, scaly or flaky powder. The damage frequently occurs between apples adjacent on the tree, or under a leaf fastened to the fruit with silk, and is common about the eye as figured, probably because the tiny larva finds shelter in the eye during the early part of its life.

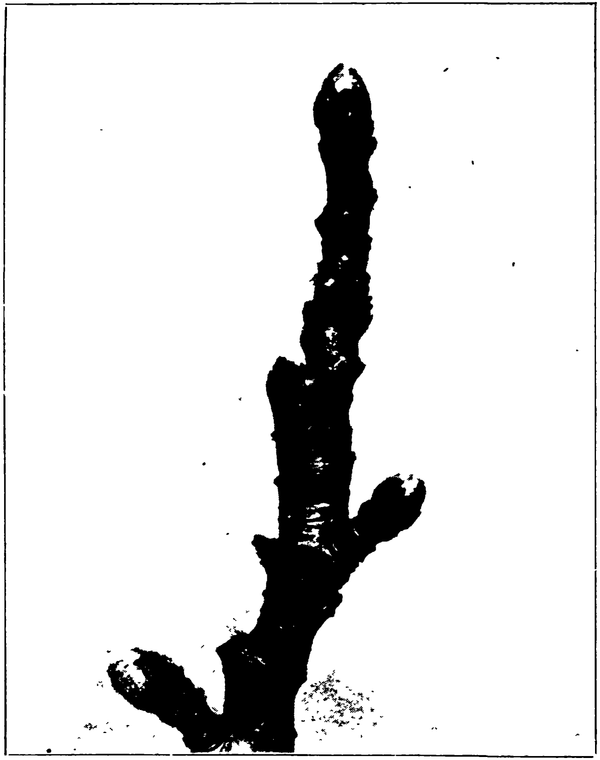

FIG. 1.—Apple spur showing Eggs of Rosy Apple Aphis *in situ*. (Nat. size.)

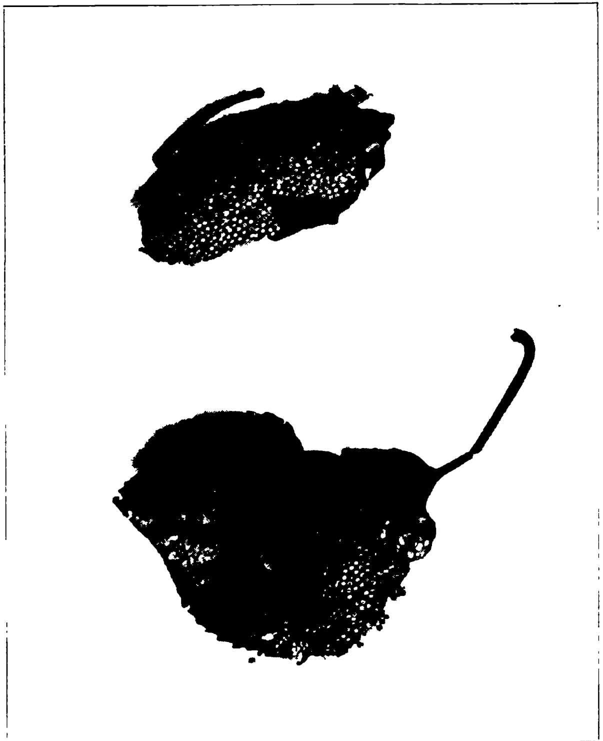

FIG. 2.—Leaves of Apples, with Cocoons and Eggs of Vapourer Moth. (Nat. size.)

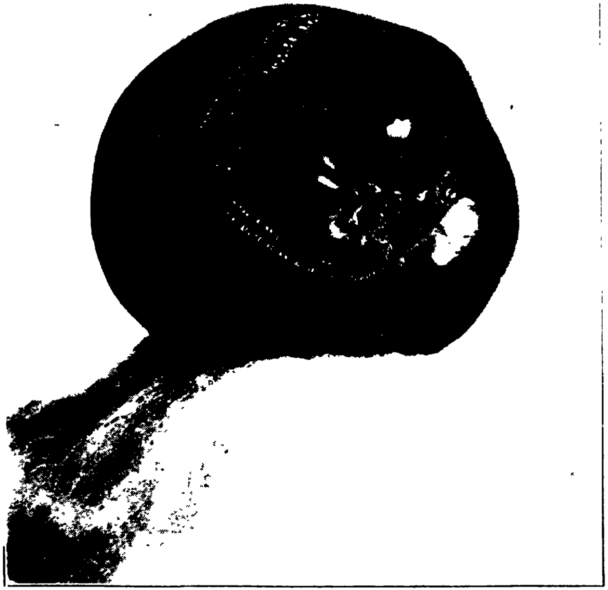

Fig. 4.—Apple showing Scar caused by Leaf-eating Caterpillar.

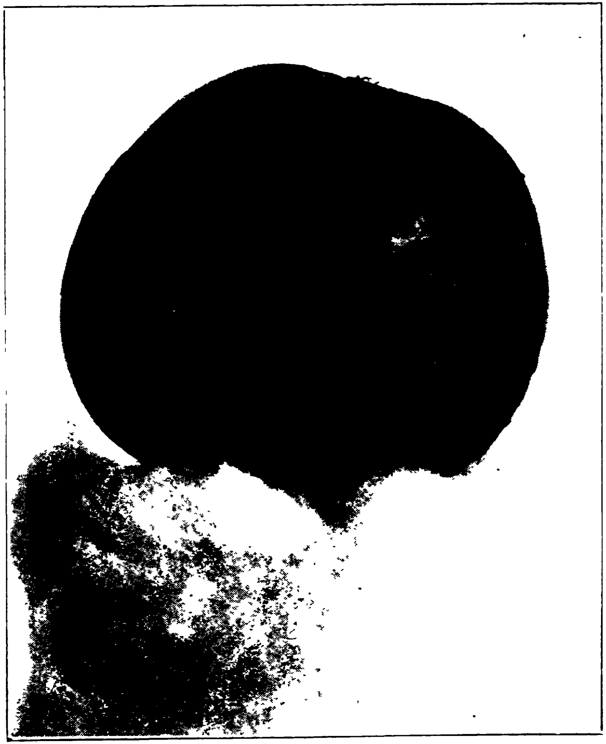

Fig. 5.—Apple showing result of attack by Capsid Bug.

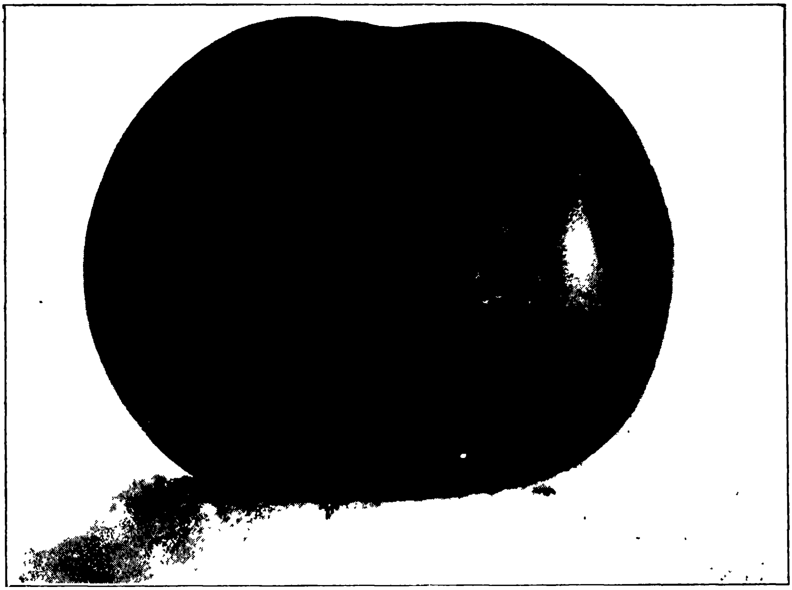

FIG. 6.—Apple showing exit hole of Codlin Moth larva.

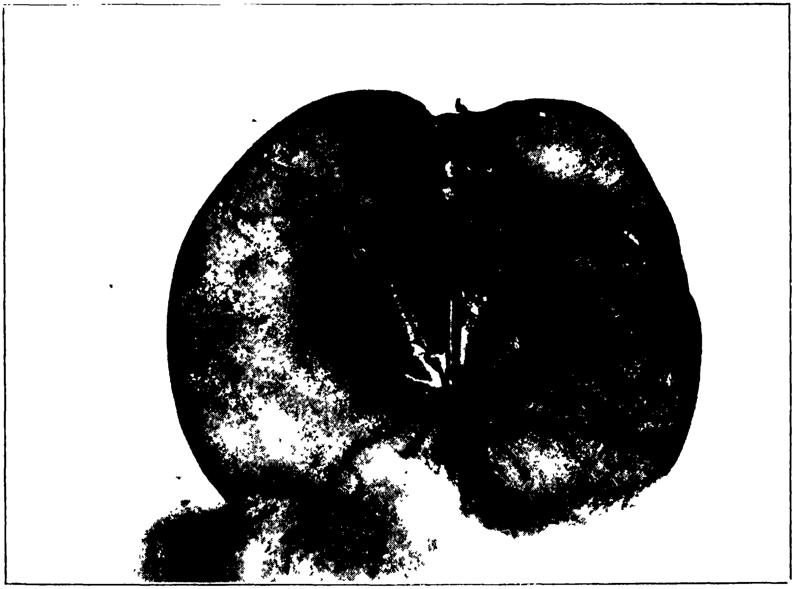

FIG. 7.—Apple infested by larvæ of the Codlin Moth.

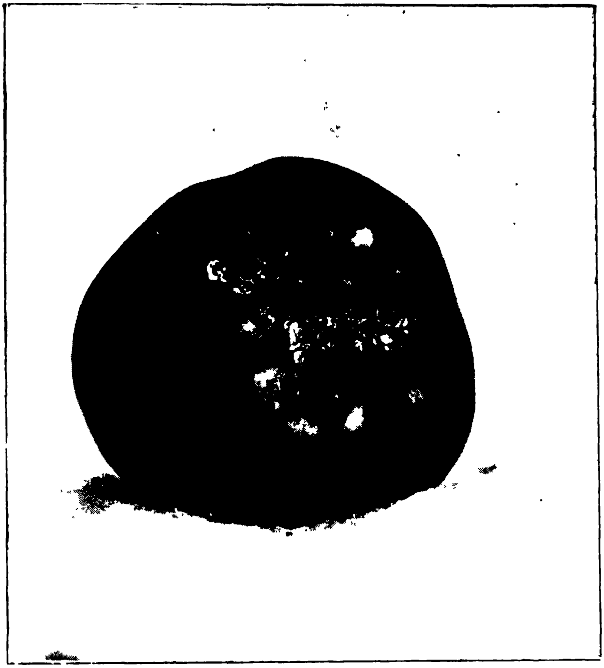

FIG. 8.—Apple showing injury caused by larva of *Argyresthia Sp.*

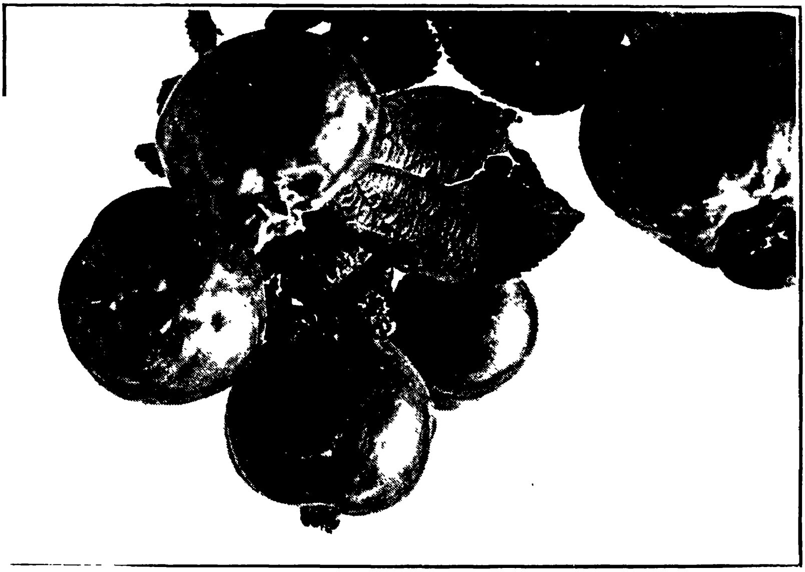

FIG. 9.—Apples showing results of attack by the Rosy Apple Aphis.
Reproduced by courtesy of "Gardening Illustrated."

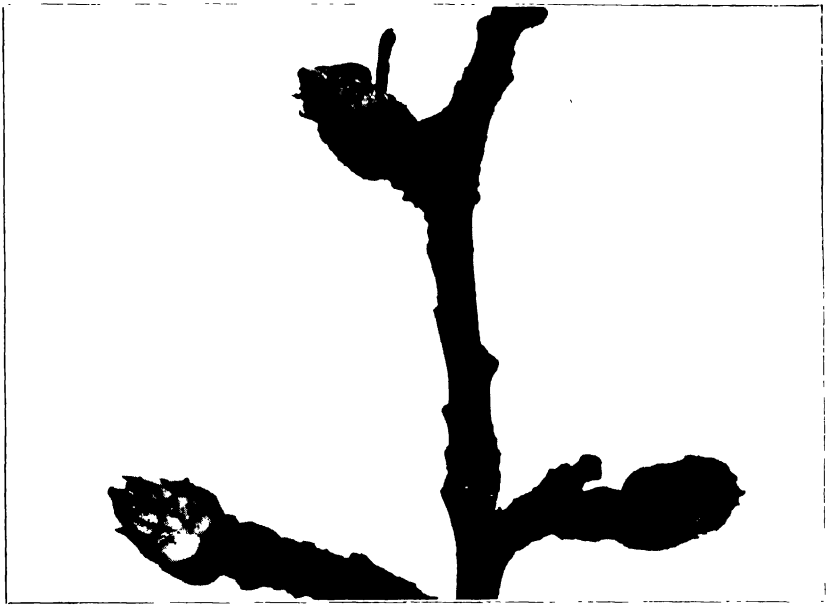

FIG. 10.—Apple twig, with developing buds, infested with Young Aphids. (Nat. size.)

FIG. 11. "Bramley's Seedling" Apple Trees in overcrowded Orchard.

FIG. 12.—Badly kept Orchard showing weedy undergrowth and unthrifty trees.

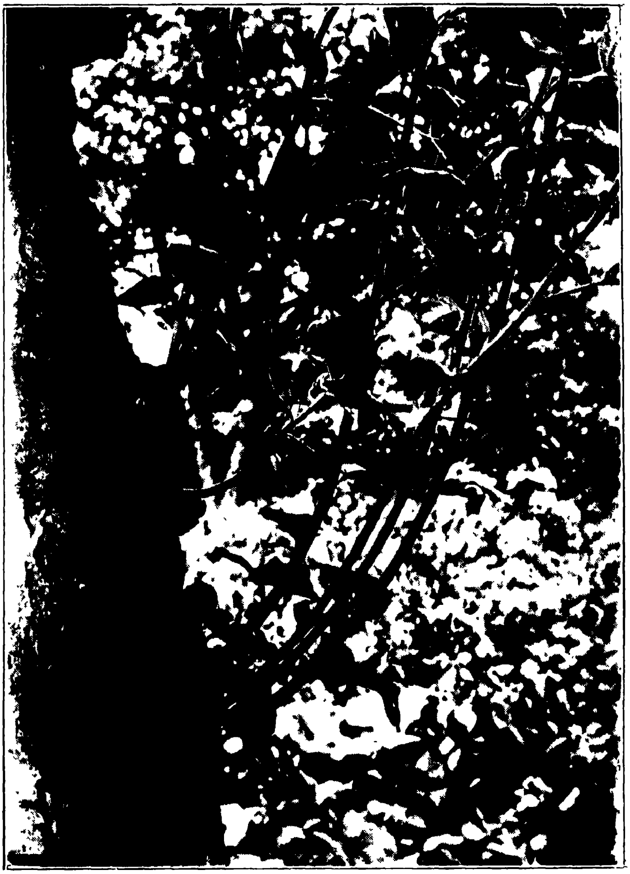

FIG. 13.—Water Sprouts arising from Pruned Trunk of Apple Tree.

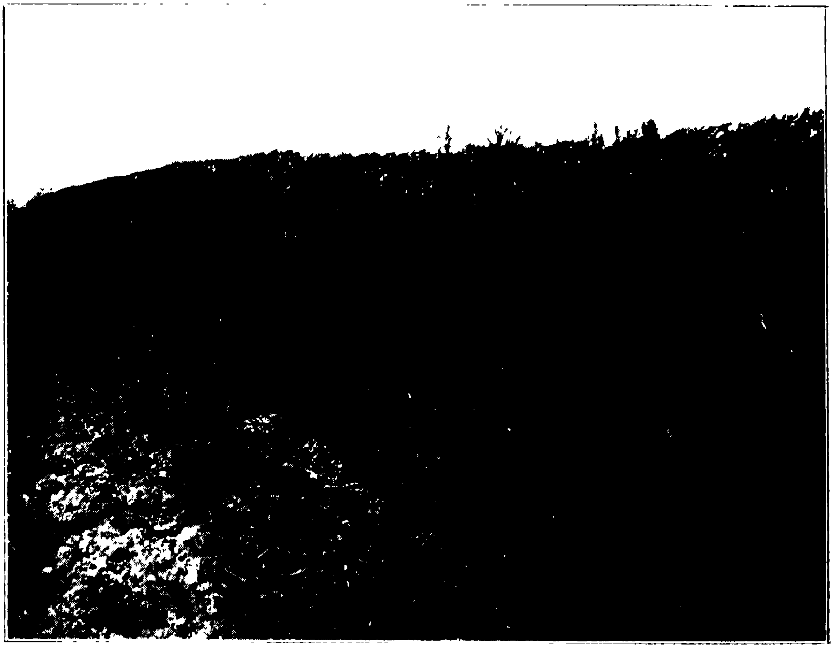

FIG. 14.—A good type of Hawthorn Hedge.

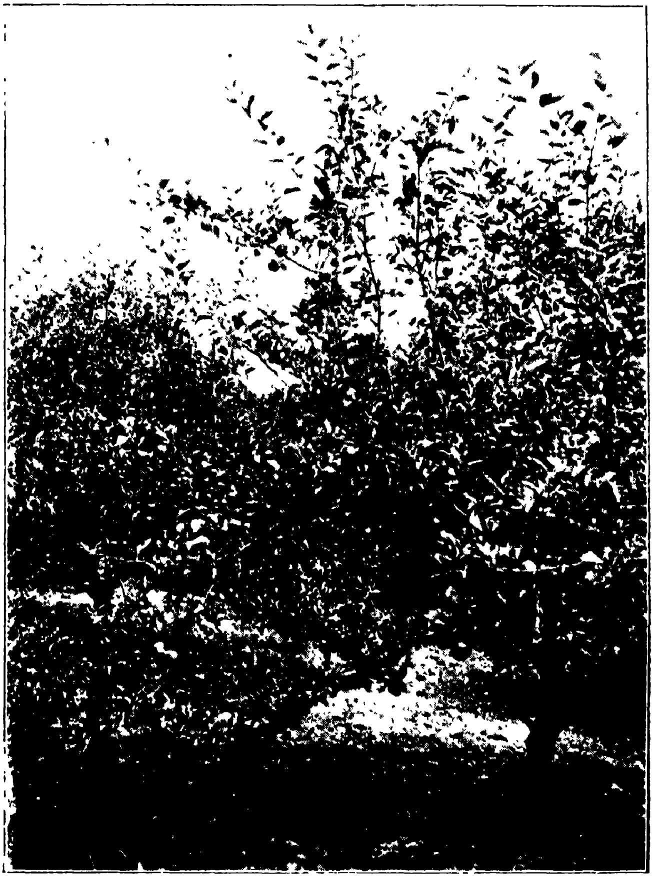

FIG. 15.—Orchard showing result of tillage and good cultural methods.

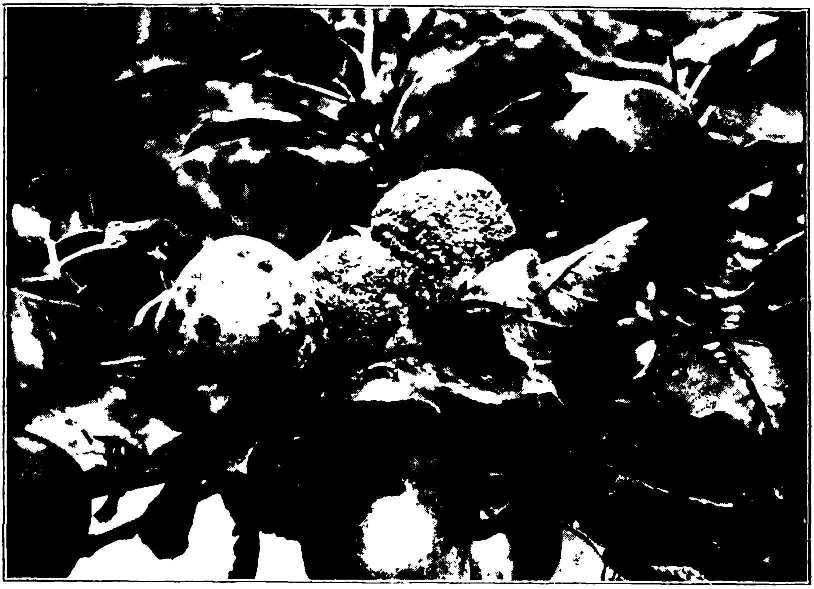

FIG. 16.—Apples in well kept but Unsprayed Orchard. (Note results of attacks by Capsids, Caterpillars and Fungi).

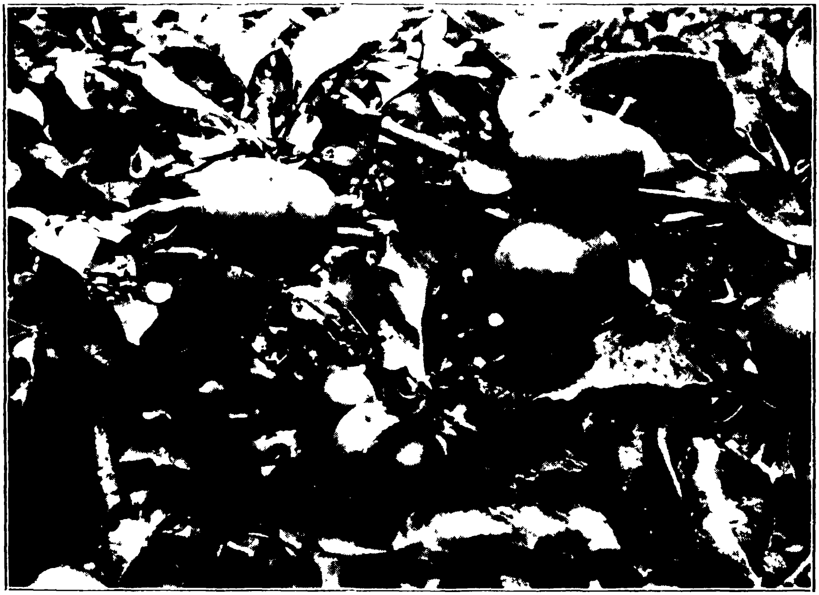

FIG. 17.—Apples (Bramley's Seedlings) in Orchard receiving judicious Spray Treatment.

The clustered "crumpled" apples (as shown in figure 9) are characteristic of attack by Rosy Apple Aphis. These clusters of small apples, which have practically no market value, are very noticeable at harvest time, especially on unsprayed "Bramleys," Figure 10 shows the first appearance of the young aphids in spring.

The damage caused by the Apple Sawfly occurs early in the season, shortly after the apples are set. It is typified by the occurrence of penetrating holes, exuding wet brown frass, in the side of the fruit; and, tunnelling in the interior, may be found a sluggish whitish larva with a brown head.

A rarer form of injury is that caused by the Dock Sawfly, *Ametastegia glabrata*, Fall., which has been described and illustrated by Petherbridge (5). It consists of small holes edged with brown, about two millimetres in diameter, and burrows of similar diameter and varying lengths. Petherbridge states that in the fruit he examined, the number of burrows in each apple varied from one to six. This damage can be easily distinguished from that by the Codlin Moth, for these burrows rarely reach the core which is not attacked, and there is no tunnel from the eye. The Apple Sawfly damage occurs much earlier in the season, the sawfly larvae making larger burrows and doing much more harm to the fruit.

The damage to pears by the Pear Midge is easily recognisable. The young maggots burrow into the eye of the fruit which then rapidly swells and becomes distorted; cracks commonly occur in attacked fruit and reveal a dark rotting interior.

The condition of loganberries and raspberries will indicate the presence of the Raspberry Beetle. The infested berries become soft and wet; if the fruit is still on the bushes it shrivels and the escaping juice forms a medium in which fungi rapidly develop. Fruit that is picked speedily becomes pulpy and unfit for market and small grubs may be found crawling about the chips.

Strawberries are often found with shallow irregular patches eaten out of the fruit, usually due to attack by the Leaf Eating Weevils; small penetrating holes in the fruit, often containing small, shiny black or dark brown beetles, indicate attack by the Small Strawberry Weevil, while hard dark coloured tips to the berries often follow attacks by the Strawberry Tortrix larvae.

WINTER CONTROL MEASURES.

The winter work in connection with pest control in fruit plantations falls into two sections: general measures and specific measures.

The general measures aim at maintaining a high standard of plantation hygiene in order to promote strong healthy growth and development among the trees and bushes, and minimising the liability to attack by noxious insects by reducing the numbers of overwintering pests and destroying, as far as possible, their hibernation sites. The special measures, which are of limited application, aim at the control of particular pests known to be present in the plantation.

One of the most important considerations in the promotion of healthy plant life is that of securing for each plant an adequate amount of sunlight and air. This is possible only in plantations where overcrowding is avoided. Overcrowding usually occurs when the fillers are not removed from the plantation as soon as the permanent trees require the space, or when trees, possibly through ignorance of the space required at maturity, have been planted too close together; the non-removal of fillers is probably the more common error. Figure 11 shows "Bramley's Seedlings" in an overcrowded orchard; the trees were six yards apart and the branches interlaced for nearly one-third of this distance. The effect of overcrowding in the plantation is readily noticeable. The deficiency of light and air results in the formation of weak buds and emaciated shoots, poor pollination and a general unthriftiness (figure 12); it also increases the proportion of small fruit, which has practically no market value. Trees in overcrowded plantations often tend to have an upward type of growth which carries the branching and spur growth high up where spraying may not be quite efficient; in some varieties this upward type of growth is frequently associated with non-fruiting. Pruning operations cannot be properly conducted in an overcrowded plantation, and spraying loses much of its effectiveness owing to the difficulty of reaching all parts of the trees. Pests find shelter and protection among the dense growth, and crossing branches may cause chafing and permit the entrance of disease organisms to the damaged bark. Overcrowding above ground usually implies close competition among the roots, and unless the plantation receives frequent dressings of manure this results in stunted growth and poor cropping.

Judicious pruning is essential for the production of good healthy fruit crops. Where the drastic removal of large branches from neglected plantations occurs or when damaged branches are removed the wounds should not be left to heal as best they can. The cuts should be made close to the main branch or trunk and rough wounds or snags should be avoided. A clean saw cut, smoothly finished with a knife is best, and for the removal of large branches an under cut first is always advisable to prevent the tearing of the bark when the branch breaks of its own weight with the top cut. Large pruning cuts of two inches or more in diameter should always be treated to keep them healthy while healing. A suitable and inexpensive dressing (6) may be made from white lead and raw linseed oil mixed to the consistency of a thin smooth paste; to render it antiseptic, ¼oz. of mercuric bichloride should be added to each quart of the paint. The dressing should be repeated each year until the callus has grown completely over. Where large branches have been removed, and frequently from the trunk or the base of the trunk. soft woody water sprouts arise (figure 13). If not removed during the summer these should be carefully cut out in winter, for they are frequently badly attacked by Woolly Aphis and may often be seen in winter blackened with the eggs of the Permanent Apple Aphis. Special care should be paid to the cutting out of diseased areas, for such sites harbour both insect and fungus pests, which may spread to healthy tissue or to healthy trees in the vicinity and cause considerable trouble.

It is most important that all branches and prunings cut out during the thinning operations should be removed some distance and burnt. It is bad practice to stack them in a corner of the plantation, for fungi and insect pests breed or hibernate among prunings and may re-infest the plantation another season. Consideration of the sites of the over-wintering of insect pests showed that the Apple Blossom Weevil, Codlin larvae and Gold Tail larvae may hibernate in such sites, and the warmth and shelter of a stack of prunings furnish ideal conditions for the hibernation of small moths of the leaf miner type like *Lyonetia clerkella*, L.

When pruning operations have been completed, the hedges should receive attention. They should be well cut back and kept within bounds. Figure 14 is a photograph of a good type of hawthorn hedge, kept clean, well dug out and judiciously trimmed. Hedge sides should be dug out, and weeds and grasses kept down, for weeds may harbour root feeding insect enemies such as weevils of the genera *Phyllobius* and *Otiorrhynchus*, which injure the roots of strawberries and bush fruits. Leather jackets, wireworms and the young grubs of various species of chafers also occur at the roots of weeds. Grasses such as cocksfoot, with a tufted habit of growth, afford shelter to many insects, and such grasses are commonly found in hedge bottoms, dyke sides and waste ground.

Tillage is of considerable importance in fruit plantations (figure 15) for, as stated in the review of pests, many species of injurious insects winter in the soil. Cultivation, by disturbing quiescent stages, is often sufficient to destroy many larvae, especially soft bodied weevil grubs; the larvae of many sawfly pests also readily succumb to disturbance. Other larvae, less sensitive to disturbance, are destroyed by birds and inclement weather conditions. Frequent shallow cultivation is doubtless best for the trees and bushes, but cultivation to a depth of three to four inches can be carried out with safety and without much injury to the surface roots. In the case of trees most of the feeding roots are at some distance from the trunk, so that deeper digging about the bases of the trunks can be carried out with advantage from the point of view of pest control and without detriment to the trees.

In arable plantations there is usually little difficulty in carrying out winter cultivation, but in grass orchards other methods of keeping down pests have to be adopted. Poultry, which are invaluable in fruit plantations, should be kept in grass orchards all the year round, and fed about the boles of the trees where their scratching will unearth hibernating insects. Wherever possible pigs or young stock should be grazed in grass orchards to keep down the herbage, for a judicious combination of grazing and manuring will encourage the formation of a close sward without clumps or tufts of grasses which shelter insect pests.

Throughout fruit plantations every effort should be made to reduce the number of overwintering sites to a minimum. Mosses and lichens which sometimes cover the trunk and main branches of the trees, especially in well established grass orchards, offer ample protection to injurious insects, as also does rough and loose bark. Moss and lichen can be removed by the application of a 2% solution of caustic soda and rough bark should be scraped off.

Grease-banding, which perhaps can hardly be considered a winter operation since the bands should be in position not later than the last week in September, is a special measure which aims at preventing the wingless females of the Winter Moth and its allies from ascending to the branches of fruit trees for egg-laying. Though inexpensive, it has much to recommend it, for every few years there occur serious outbreaks of caterpillars which defoliate the trees, destroy the greater part of the blossom trusses and cause the complete failure of the crops. The writer has seen this happen in mixed plantations regularly grease-banded and then left for a season, the growers feeling that perhaps they did not derive much benefit from the operation. The method of applying the grease-bands is too well known to need detailed description. A good quality grease should be applied, one which does not congeal but retains a sticky surface throughout the winter. In the case of young trees, it is always advisable to apply the grease on paper bands, as there is a risk of injuring the bark. It is well to explain to workmen the object of grease banding in order that such mistakes as banding young trees and leaving unbanded stakes which reach well into the branches, may be avoided. In young plantations where spraying is regularly carried out each year little need arises for grease banding, but in orchards where for various reasons spraying during the summer is impossible, grease banding will well repay the cost of its adoption as a routine practice.

Winter spraying usually has for its aim either the destruction of insect stages about the trees or, in the case of cover washes, their imprisonment beneath a coating of spray material. Lime or lime and salt are generally used for cover washes ; they have valuable bark cleansing properties, but are not reliable as egg-killing washes, and do not efficiently prevent the escape of insects such as aphids and suckers from their eggs. Except in a few districts, cover washes are being superseded by washes containing tar distillates, lime sulphur or cresylic acid. These washes all have considerable cleansing properties, and are thought to have some adverse influence on the hatching of insect eggs, though the recent work of Lees (7) at Long Ashton has not borne out this assumption with regard to lime sulphur and cresylic acid and their action on the eggs of the Permanent Apple Aphis. Under experimental conditions at Long Ashton these two washes failed to show definite egg-killing power, while tar distillates, of which several were tried, gave generally good results. The spray selected for use will depend largely on the condition of the plantation with regard to pests and diseases. Lime sulphur is a good bark cleaner, and has fungicidal properties of considerable importance ; its efficiency may be increased by the addition of calcium caseinate at the rate of one and a half to two pounds per hundred gallons of spray. It may be applied during the dormant season at strengths varying from 1 in 15 to 1 in 30, and if used in March gives a certain amount of control of aphis sucker and caterpillar pests. Tar distillate washes are useful general winter washes, because of their cleansing powers, egg-killing qualities and slight fungicidal actions. There is considerable variation in the mixing qualities of the different brands of tar distillates, and from field observations there seems to be little difference in their insecticidal value, though Lees (*op. cit.*) has shown that there is actually a wide difference in egg-killing power when it is carefully measured. Tar distillate washes should be applied at the strengths recommended by the makers, this usually varying between 7½ and 10 per cent. The time of application is important, because of the risk of injury to the developing buds, and it is generally advisable to apply the spray in early January for plums and pears, and not later than mid-February for apples. Routine spraying with tar distillate washes is said to effect satisfactory control of Woolly Aphis, but where this pest has become serious commercial "red oils" at recommended strengths are useful in controlling it and, moreover, exercise considerable control on Mussel Scale, a common pest in young plantations and ubiquitous in established orchards. Sprays containing cresylic acid may be obtained under a variety of trade names, and are regarded as having general egg-killing powers; moreover, there is a certain amount of evidence that they are of some value in reducing the hatch of the eggs of the Capsid Bug.

Though winter spraying can hardly be considered apart from the annual spray programme; probably the most satisfactory results, as far as reducing insect attack is concerned, will accrue from the use of washes containing tar distillate or cresylic acid from mid-December to mid-February, according to the state of development of the trees and bushes.

CONCLUSION.

While by no means guaranteeing immunity from the attacks of insect pests, the operations suggested and discussed in the foregoing pages offer advantages worthy of consideration by all fruit growers. The underlying aim is the reduction of losses due to the attacks of insect pests in fruit plantations; and the methods advocated are inexpensive, easily carried out and at the disposal of practically every grower. Where these operations are carried out systematically as routine work in the plantation, epidemics can be dealt with with considerable chances of success, for the trees and bushes will be in a healthy condition and better able to withstand attack, and since general pests will be reduced to a minimum, treatment for epidemic pests can be concentrated upon without loss of time. Another advantage arising from the adoption of winter control measures is that summer work in connection with pests is much reduced, a matter of considerable importance on a mixed plantation where frequently all available labour is required for perishable crops.

At the present time winter spraying is often adopted without regard to the pests present or to the general condition of the plantation, with the result that the grower often fails to obtain the expected results, and after one or two disappointments condemns the operation and the materials and abandons the plantation to the vagaries of the season, taking what comes in the matter of yields. If winter spraying is to be successful due regard must be paid to the pests occurring in the plantation during the previous season and to those overwintering about the trees and bushes, and the spray should be applied at the time when maximum benefit will be obtained.

It is important to realise that healthy plantation conditions and immunity from the attack of insect pests cannot be accomplished by the work of one season, no matter how conscientiously that work is done. The maintenance of a high standard of plantation hygiene requires constant vigilance on the part of the grower. Pest control measures must be intelligently and consistently practised as routine operations, for by this means only is it possible to secure maximum yields of first-grade fruit (figures 16 and 17) and keep the expenditure within economic limits.

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V.—BOKHARA CLOVER.

By Gervaise Turnbull.

This plant is not a new introduction to English farmers, but it is unknown to many, and as it is one of more merit than some of the forage plants introduced of late years, it is worth some attention. Indeed, it has qualities which at the present time would seem to entitle it on some soils to much closer consideration than it has from time to time received, for it has some remarkable properties, and, being a legume, the ease and freedom with which it grows and adds to fertility, should not escape notice.

It is one of the Melilots, or "Sweet Clovers," and not a clover proper, as the title of some recent and very laudatory accounts of it might lead one to suppose—a wide-spread, free-growing genus of many species, which have been known for centuries, but whose great value we are credibly informed has only of recent years been realised, and this more in America and Canada than at home. The older writers are not too lavish in their praise of *M. Alba,* on account of its bitter taste, highly aromatic qualities, stickiness, woodiness, and so on, but more recent accounts from seedsmen and those who have grown and fed it, also from America, are much more favourable. For bee-keeping it has long been valued.

It is claimed that all stock do well on it, sheep and pigs in particular, and some sheep farmers have endorsed this as regards sheep at any rate, but the extravagant claims that were put forward on its behalf in certain quarters two or three years ago, cannot be entertained.

Perhaps its chief claims to notice lie in its very rapid growth, great bulk, soil enriching qualities and adaptability to grow on a variety of very poor soils. I have myself recently seen it growing luxuriantly up to some seven feet in a poor, chalky slope as a seed crop; and as a soil improver it would seem to have considerable possibilities, owing to its abundant root growth, while it is claimed for it that it will succeed on almost any class of poor soil that is not acid or waterlogged and has enough lime, though it may be useless for any other crop. If cattle prefer it, when used to it, to any other crop, and if it will support nearly 100 per cent more stock than grass land, it is clear that much poor land is not producing what it might do.

As these claims are big ones, it is instructive to compare them with authoritative American statements, for it is from that country that most of our information is obtainable, and as soil and climate are by no means important factors in its growth, the usual difficulties associated with foreign surroundings do not apply. For this reason, the fact that it has "enormously increased in use," during the last decade on the American continent is of significance in this country also. Besides this statement we have it on good authority, that it thrives equally well in semi-arid and in humid districts, stands winter frosts well, and succeeds on land which is often too dry for lucerne. Also that practically all types of land are suitable to it, including poor sand and gravel and stiff clay, provided it has an abundance of lime (this must usually be added if the land is deficient in it); that in hardiness it excels red clover and lucerne, and on poorly drained, wet or low-lying land, stands better than these plants. This last point is true with regard to climate also, so that, given the necessary lime, there are considerable areas in this country too, where it should be superior in production to these two often unsatisfactory legumes. It provides an earlier growth, too, in the second year, than lucerne in the States by two weeks, and an enormous bulk, which has sometimes exceeded 30 tons per acre at the Ontario experimental station.

The main point to bear in mind in cultivation is shown by investigations in America to be the firmness of the seed bed, half measures being wrong here. Also inoculation, as with lucerne, may be required. Seeding may be rather expensive at present, as so little has been grown in our own country as yet, and as it is, it should be remembered, a native British plant, probably British grown seed, as with clover proper, is best. Eight and fourteen pounds of seed per acre, broad-casted is variously recommended in this country, 10lbs. gives " perfection " in Idaho, while in Germany 26lbs. seems to be required, or 13lbs. if drilled.

For English sowings, seeding down in Spring with a thin crop of oats, as the best nurse crop, has been recommended recently, the whole being fed off early or cut green ; but it would seem to be compatible with taking a corn crop such as oats, wheat or barley, as found useful in the States, and, it is worth noting, particularly peas, as there is, with them, far less reduction of the crop, it is found, and they suit a limy soil.

Generous tributes have been paid to sweet clover on the score of a soil improver, not only as a nitrogen collector, but mechanically, by means of its long roots. The following figures arrived at in this connection show how well it compares with red clover :—

	Dry matter per acre. lbs.	Nitrogen per acre. lbs.
M. Alba (whole plant) ..	10,367	228
——— (roots)	2,410	
Red Clover (2 tons hay) (Warrington)	3,763	98

The tops contained most nitrogen in M. Alba, and one quarter of the root material was 7 to 20 inches deep in the ground. This plant seems to hold out great possibilities as hay or as silage, or for pig grazing. All these uses are confirmed by American experience, all being attractive propositions over there. Very high quality hay is recorded for first year's growth up to 3 tons at least, in three cuttings in good soil, with no nurse crop, in the year of seeding, while the silage is said to be excellent, and to much excel that made from lucerne and red clover in keeping properties, yield being intermediate between the two.

Two of the outstanding objections to this plant in England seem capable of ready remedy. Its bitterness which stock dislike (at first, only, it would seem in practice), can be greatly alleviated by cutting it very early, while its tendency to woodiness makes early grazing indispensable, a point ever to be kept in mind. Its strong aromatic qualities may even be found useful, as in old days, by using the hay as a sandwich amongst inferior stuff.

As regards feeding properties, it is noticeable that while ranking very high in nitrogen amongst many legumes of the forage type, it fails somewhat in digestibility, particularly as hay, though, whether green or as hay, it compares well with other legumes, except that its starch equivalent is rather low.*

M. Alba would, then, at least seem entitled to rank as a green manure of a valuable kind, a use to which Percival† chiefly refers it, but there seems good reason to place it higher, and pig keepers on poor land might well exploit it.

Its near relative (M. officinalis, common, or yellow melilot) was of old grown as fodder, but its more annual habit makes it less valuable for this purpose, though its roots are said to afford an abundance of valuable nitrogen.

I have recently been informed by an enthusiastic grower on a large scale, that M. Alba is much superior to M. Officinalis, and that he finds the former useful in getting lucerne to grow. Indeed, he claims that he has grown these two together. Will this solve the inoculation problem ?

M. Officinalis is also much less leafy, but as it shows marked ability to grow in very dry land, and can be grazed very hard, and yet flourish well, it has been suggested that on such a soil it might be advisable to mix it with alba, as it injures the latter to cut or graze too close.

Growers should not confuse either plant with Hubam, or Annual White Sweet Clover (M. Alba, var. annua), which attracted some interest recently. It is far less hardy, and the trials at Aberystwyth were disappointing in various ways, and though it is found of value in some respects in America it seems to be there regarded otherwise as inferior to alba. Scotch trials, too, over a series of years, I am informed by growers, have been very uneven, the plant doing splendidly in some years, but in years like 1923 and 1924 not over a foot of growth was obtained.

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* Kellner. The Scientific feeding of animals.

† Agricultural Botany.

VI.—BOVINE TUBERCULOSIS IN RELATION TO THE HEALTH OF MAN.

By Professor J. Penberthy, F.R.C. V.S.

Though tuberculosis had been long previously recognised as a contagious disease of cattle and other farm animals, no idea of its prevalence in Great Britain existed until the revelations of *post mortem* examination of cattle slaughtered for the eradication of pleuro-pneumonia in the 'eighties of last century showed that the affection was alarmingly prevalent, especially among our dairy stock. Arising out of the knowledge so gained, a Departmental Committee was appointed by the President of the Board of Agriculture, which in 1888 reported "that the widespread injury and loss caused by tuberculosis calls for legislative interference." Their recommendations for prevention and extirpation were almost identical with those included in the most recent Tuberculosis Order. Of the Committee's conclusions, however, not a few are unacceptable to-day. It was assumed that tuberculosis of fowls was communicable to cattle and conversely the tuberculosis of cattle to fowls. An eminent medical member of the Committee drew up a separate memorandum, in which it is stated that the influence of heredity was so completely confirmed by the results of scientific investigation, that he considered the deliberate act of breeding from an animal affected with tubercle should be made an indictable offence. This Committee further reported that tuberculosis of cattle may be communicated to man especially by the ingestion of tubercular diseased meat and milk, that the disease spreads from animal to animal, and that legislation directed to the protection of cattle should at the same time include such measures as will also prevent its communication to man.

This report, though not immediately followed by general legislative action, served to arouse a wider interest in the subject, but the bias was naturally towards concern for the public health rather than the effect of the disease on live stock and its owners. As a matter of fact, the extent of the losses from tuberculosis in cattle and other farm animals is not appreciated as we think they should be by the stock owner. At any rate, the call for legislation has been made for the protection of human health, and legislative measures have been directed towards that object. For some time following the issue of the report referred to, there was a loud demand for panic measures. In 1893 a deputation from the London County

Council to the President of the Board of Agriculture advocated the adoption of measures similar to those applied to pleuro-pneumonia, in the belief that tuberculosis of cattle could be eradicated in twelve months.

Elsewhere it was urged that every cow in the country should be submitted to the tuberculin test, and that no milk from any tuberculous (reacting) cow should be sold for human consumption. This outcry was accentuated by an announcement of the then Registrar-General (Dr. Latham) "that the decline in mortalities from those forms of tuberculosis which principally affect young children was not proportionally as great as in those forms which principally affect the older population." Cows' milk was thus brought under special condemnation.

In the eradication of pleuro-pneumonia all animals which had been in contact with the diseased were slaughtered, and, inasmuch as there are probably not more than 5 per cent. of our herds which do not include a tuberculous animal, eradication by this procedure would involve the slaughter of ninety to ninety-five per cent. of the cows in the country. Even the destruction of only those cattle reacting to the tuberculosis test, generally estimated at 25 to 35 per cent. of our herds, would have a disastrous effect on the national food supplies.

The relation of bovine tuberculosis to tuberculosis of man remains a problem. The degree of danger to human beings from drinking cows' milk is by no means settled. The differentiation of tubercle bacilli of the human from those of the bovine type, and the discovery of both in tuberculous lesions in man, so thoroughly investigated by the last Royal Commission, we regard as not open to question. However, if for information as to the incidence of mortalities from tuberculosis in England and Wales the returns of the Registrar-General are consulted, it will be found that the figures are given under two heads, viz.: "Tuberculosis of the Respiratory System" and "Other Forms of Tuberculosis." The former includes mainly persons above the age of five years, the latter principally young children.

The total number of deaths at all ages and from all causes in 1921 was 456,600. Of these tuberculosis was responsible for 42,678, or 9.3 per cent. The following figures indicate the mortalities from tuberculosis for the years 1894 and 1924 respectively.

Respiratory:—1894: 41,641 deaths. 1924: 32,690 deaths, indicating a decline of 8,951, or 21.2 per cent. in thirty years.

Under " All other Forms of Tuberculosis " the deaths of children up to five years of age in 1894 are recorded as 11,650, and for 1924, 3,341, a decline of 8,309, or 71.4 per cent. in thirty years.

From the returns of the Ministry of Agriculture it will be seen that between 1894 and 1925 the cows and heifers in milk and in calf have increased by 567,825, which, at the low average yield of 400 gallons per animal per year, represents an increase in 30 years of about 227,130,000 gallons in the yearly yield of milk. In addition, about 450,000,000 pounds of butter are imported yearly, and this amount is rapidly increasing. We learn that living bovine tubercle bacilli are found in butter, even in that salted for nine months.

Mr. Burns, then President of the Local Government Board, addressing a deputation in 1908, said " the decline in mortality from tuberculosis in Great Britain is greater than in any other country."

In a review of the returns of his department for 1921, the Registrar-General writes, concerning the figures relating to tuberculosis :—" The fall from 1901 onwards has been largely due to decline in mortality from non-pulmonary tubercle, practically one-third of the decrease being thus caused. If this were to continue on the same scale for another twenty years, mortality from non-pulmonary tubercle would have ceased. Though, as a result of the war and influenza, the rate of decline which had obtained for several years up to 1917-1918 was interrupted, it has resumed and increased."

It is certainly remarkable that as infant breast-feeding has largely gone out of practice, and the supply of cows' milk and its consumption, particularly by the very young, have so enormously increased, the forms of tuberculosis, which are thought to be largely responsible for mortalities in children of tender years, have declined so consistently as to effect a fall of 71 per cent. in the 30 years. We know of no evidence indicating that tuberculosis in cattle has become less prevalent in the period, while it would appear that with the congregating of a larger number of cows the opportunities for contracting the disease are not likely to have diminished. To a more general appreciation of the laws of hygiene and the cause of tuberculosis and its activities may, perhaps, be credited some portion of the decline in all forms of the disease in man. Some of our larger and more progressive authorities have adopted measures, which have effected a decrease in the number of samples of milk containing tubercle bacilli in their own area, and a considerable number of dairy farmers have very recently freed their herds from tuberculosis by eliminating affected animals, but, as there has, in the thirty years under review (except for the year 1913) been little compulsory slaughter, we have no assurance that the milk of the tuberculous animals has not been consumed elsewhere. The surgical removal of tuberculous lesions coming within the category of "other forms" has averted a certain number of deaths. We do not think that all these circumstances can have played a considerable part in the decline. In fact, it would appear that the more milk consumed by any section of the community the greater the freedom from fatal tuberculosis.

As these facts have, to some extent, been realised, a material change in view as to the effect of cows' milk on human health has taken place. Indeed, there appears to be growing up a school of thought which is disposed to regard bovine bacilli in small numbers in cows' milk as blessings in disguise, in the belief that a mild infection with bovine bacilli gives just that degree of immunity which saves enormous numbers of people from acute and fatal attacks by tubercle bacilli of the human type; in fact, that the ingestion of bovine bacilli is of material advantage to the human race. *Post-mortem* examination indicates that from 90 to 95 per cent. of human beings have at some period of life been the subjects of tuberculosis, which by some means has been cured or held in restraint. In the appendix to the Final Report of a Departmental Committee on Tuberculosis (1913) is a memorandum by Dr. Eastwood on "Problems left unsettled by the recent Tuberculosis Commission." Therein we find a report on experiments made by Drs. A. S. and F. Griffith, which states that "the experiments clearly show that by inoculation of large doses of living human tubercle bacilli as well as by inoculation of small doses of bovine tubercle bacilli, the resistance of a calf can be raised sufficiently to protect it against the inoculation of a dose of bovine bacilli capable of setting up severe and fatal tuberculosis in a calf not so protected. The experiments show that this degree of immunity is not always produced." It seems, therefore, that the tubercle bacilli, human and bovine, may have a protective effect on calves. It is not practicable to inoculate human beings with germs, which may induce mortal disease, and most of the conclusions arrived at as to the effect on humans of milk containing bovine tubercle bacilli have been arrived at by inference.

It is generally recognised that while germs entering the system in small numbers may do little or no harm, massive doses may break down the animal's resistance and produce serious disease. What effect the withdrawal of every bovine tubercle bacillus, prior to that of human tubercle bacillus, might have on the human race is scarcely a special concern of the stockowner, but the public may fairly demand to be supplied with articles of diet free from injurious germs and other noxious or unpalatable matters.

The legislative measures now in operation should, if generally complied with, do much to avert any danger which might arise from the ingestion of massive doses of tubercle and other germs, while due regard for cleanliness in the production and handling of milk, which is one of the conditions of licences to produce or sell, cannot fail to have a salutary effect.

From the purely agricultural standpoint, it must first be realised that tuberculosis of cattle and other farm stock, though often insidious in its attack and slow in its progress, is a source of great loss to the industry ; that it is a contagious disease, invariably due to the bacilli of bovine tubercle, discharged by an affected animal in milk, fœces, urine, material coughed up and otherwise, matters with which the new Tuberculosis Order is designed to deal.

In any well directed attempts to eradicate tuberculosis from dairy herds, whether by the State or the private owner, the tuberculin test must play an important part. The Tuberculosis Order, 1925, provides for application of the test with the owner's consent. The Milk (Special Designations) Order, 1923, issued under the provisions of the Milk and Dairies (Amendment) Act, 1922, enforces its application as one of the conditions on which licences to produce "Certified Milk" are granted. Under these circumstances, considerable interest has been aroused by the issue of a Report of the Tuberculin Committee of the Medical Research Council on their experimental work on tuberculin testing. It appears that this work was undertaken under the conviction that the subcutaneous test, for many years past in general use, appeared to be a perfectly satisfactory test for the presence of tuberculosis in cattle when carried out under laboratory conditions, but that it is not satisfactory when carried out under ordinary farm conditions, the discrepancies then prevailing being so serious as to vitiate the application of the test for practical purposes. Indeed, it is stated that the Committee was appointed because of complaints by owners of herds producing certified milk that veterinary surgeons, who carried out the tests, were often unable to state definitely whether tested animals were or were not infected with tuberculosis. The laudable object of the Committee was to devise a simple and trustworthy test by which the presence of a tuberculous animal in a herd may be speedily detected. The report appears to suggest that such has been devised and is to be known as The Intradermal Test, for which is claimed greater reliability, simplicity, and more consistently accurate results in practice than any other test or combination of tests; that temperature taking is obviated, and that animals need not be left indoors during the test, but can lead their ordinary life. The Intradermal Tuberculin Test, which has been in use for several years, is carried out by the injection of tuberculin into the substance of the skin, not under it, and the effect (reaction) is looked for in a swelling at the seat of the inoculation. Usually heretofore there has been only one injection into the skin.

The Intradermal Test described in the Report is carried out as follows:—An area of from two to six square inches at about the middle of the side of the neck is shaved with a sharp razor, care being taken to avoid cutting or abrading the skin. A fold of this skin is grasped between the forefinger and thumb and its thickness measured with a pair of calipers. After the preliminary measurements are taken and recorded, the first or "sensitising" dose is injected into the skin at the fold by means of a very small glass syringe. In 48 hours after the first injection measurements of the fold of skin are taken and recorded, and the second, or "test" dose is injected into the skin at the same spot as the first. After twenty-four hours the fold is again measured and record made. In injecting the tuberculin the greatest care must be taken to ensure the whole dose going *into* the tissue of the skin; if injected *under* the skin the test is vitiated. In the tuberculous animal the reaction is observed in increased thickness of the skin as shown by the caliper's measurement. There is a varying degree of swelling, accompanied by heat and tenderness. In the non-tuberculous animal there will be little or no swelling, but at the seat of injection a sharply circumscribed area, pea or bean-like, devoid of œdema, heat and tenderness is usual. It is gathered that if there should be any doubt concerning the nature of the reaction, as there may be until experience is gained, a further examination may be made 24 hours later, when the difference between reactors and non-reactors is very definite. It is also stated that in all their recent work it has been the practice of the Committee to carry out a double ophthalmic test concurrently with the double intra-dermal, which serves as useful confirmatory evidence.

A careful study of this part of the report, it is feared, is not likely to leave an impression of simplicity. The measurement of the fold of skin with a pair of calipers on at least three occasions during the test, and keeping the only record on which to interpret and report the results of the test, would appear to call for considerable skill.

Notwithstanding the apparently high importance attached to the measurement, the announcement by a member of the Committee dealing with criticisms after a demonstration he had given, is reported to have said : " It cannot be too clearly pointed out that palpation of the area (*feeling with the fingers*) is of far greater diagnostic value than are the measurements, and, for ordinary purposes, measurements may be dispensed with."

We further gather from the report that the indications of the Intradermal Tests in a considerable proportion of animals slaughtered and submitted to *post-mortem* examinations were incorrect. In one instance, of five animals slaughtered, two proved to be tuberculous though they had been subjected to the intradermal test and did not react. Indeed, the Committee's report hardly supports all the claims of superiority of their test, and we do not find evidence on what, after all, is most important, a clean cut test between the virtues of the subcutaneous and the other tests. We do know that in the hands of men of experience with the essential capacity for interpreting correctly many herds have been cleared through use of the subcutaneous test. We think that in capable hands the same result might follow the application of the Intradermal method, but that the latter will supersede the former as a result of the work reported on by this Committee appears very doubtful. Possibly the member of the Committee who, after some criticism of his remarks, said : " I consider the Intradermal Test is at least as good as any other," has abandoned some of the claims to superiority. It is not intended to convey the idea that there is no room for improvement in this relation. Indeed, the aim of the work entered on at the direction of the Medical Research Council, is of very considerable importance, and it is to be hoped that enquiry will be prosecuted farther in the light of greater experience.

In Volume VIII. of the current series of this Journal, the Tuberculosis Order of 1913 was critically reviewed. It is, therefore, proposed to refer only to any amendments found in the Order of 1925, in operation since September 1st, 1925. The Order of 1913 came into operation on May 1st of that year. In 1914 it was withdrawn on representations being received as to its working, and a new Order, giving effect to suggested alterations, was issued to come into operation on July 1st, 1914, but was suspended on the advent of war. The more important changes in the provisions of the Order of 1925 are as follows :—

Article 1.—(ii.) " Emaciation due to tuberculosis " substituted for " tuberculosis with emaciation."

(iii.) Any bovine animal which is suffering from a chronic cough and showing definite clinical signs of tuberculosis.

Under No. 2 of *Article* 4 the veterinary inspector is empowered, if he thinks fit, to submit any samples he may take for examination to a pathological institute approved by the Ministry.

Article 5 (2) the value of an animal the slaughter of which shall not be carried out except under the Minister's direction, is raised from " exceeding thirty pounds " to " exceeding fifty pounds."

Article 6 in the 1925 Order is new. It prohibits the movement of animals in certain circumstances except with licence from an Inspector of the Local Authority.

Article 6 becomes *Article* 7 in the 1925 Order. It establishes the one valuation, and provides that for purposes of the Order the market value of an animal shall be the price which might reasonably have been obtained from a purchaser in the open market, who had no knowledge of the existence or suspected existence in the animal of the symptoms of disease disclosed by the report of the Inspector. under this Order, except such knowledge thereof as might reasonably have been obtained by inspection of the animal.

Article 9 provides for payment of market value and a further sum of twenty shillings in case of an animal slaughtered under the Order if the certificate of *post-mortem* examination does not show that the animal was suffering from tuberculosis, or if the Local Authority fail to carry out the examination.

For an animal found to be tuberculous the minimum amount payable is herein raised from 30s. to 45s., the basis of compensation remaining the same.

Article 10, in relation to precautions to be adopted with respect to milk, provides that until six weeks from the examination by a Veterinary Inspector have expired to enable microscopical and biological tests to be carried out, if necessary, or the owner or person in charge thereof has been notified that this article has ceased to apply, the milk of any cow which is, or appears to be, suffering from chronic disease of the udder or tuberculous emaciation, or is suffering from a chronic cough and showing definite clinical signs of tuberculosis, shall not be mixed with other milk, etc. (The period allowed in the Order of 1914 was three days).

Article 11 (1) the provision that an animal under detention and isolation may at any time be slaughtered by the owner or person in charge, is omitted.

Article 14 prohibits the landing in Great Britain of an imported animal which is, or appears to be, suffering from any disease specified in Article 2 (1) of this Order.

The Tuberculosis Order 1925 (No. 2) directs that the following Article, 5A shall be read as if following Article 5 in the Order. This new Article provides that where a Local Authority proposes to slaughter an animal under this Order and to dispose of its carcase or any part thereof for human consumption, notice of intended slaughter with certain particulars shall be given to the responsible Officer of the Sanitary Authority that no part of such carcase shall be removed for human consumption except with the permission in writing of the Medical Officer of Health or other competent officer of the Local Authority. If any carcase is removed in contravention of this Article, the person removing or causing removal of the carcase shall be deemed guilty of an offence against the Act of 1894.

The Diseases of Animals Act, 1925, directs that where compensation for any cattle slaughtered under the Tuberculosis Order is paid by a Local Authority out of local rates, the Local Authority shall be entitled to be repaid by the Ministry of Agriculture out of monies provided by Parliament, a sum equal to threequarters of the amount of compensation. In computing the amount of compensation paid by a Local Authority no deduction shall be made in respect of any sum received by the Local Authority on the sale of the carcase.

The alterations are principally of a technical nature and generally not unfavourable to the stock-owner. The one valuation, at marketable price, for compensation, removes an alleged obstacle to the smooth working of the Order of 1913.

Dissatisfaction has been felt with the provision in Article 4 empowering the Veterinary Inspector to take samples and submit them to a pathological institute for examination; with that of Article 10, which directs that the milk of any cow from which samples have been taken under this Order shall not be mixed with other milk, etc., until either six weeks after the examination has expired to enable microscopical and biological tests to be carried out, if necessary, or the owner or person in charge thereof has been notified that this Article has ceased to apply to the cow. Though it does not appear probable that the biological test will frequently be necessary, the owner of a cow, the milk of which is held up for six weeks, must suffer considerably, and it is generally held that at least if the result of the test is negative, the owner should be compensated for his loss on the principle which is adopted in the case of an animal showing no evidence of tuberculosis on *post mortem* examination.

The duties devolving on the stockowner are practically the same as in the earlier Order, notification, taking precautions with respect to milk, detention and isolation of suspected animals, cleansing and disinfection. There are inherent difficulties in dealing with tuberculosis, particularly in relation to diagnosis. These the expert even does not always surmount readily, particularly if the tuberculin test is denied him. The owner or person in charge of dairy stock is assumed to have a knowledge of animals in health, and, by such an Order, is under special obligation to exercise such close observation as will make him aware of abnormal conditions, and to report anything which appears to him to be tuberculosis in any of the forms defined in the Order. He cannot be asked of his own knowledge to differentiate between tuberculosis and similar conditions, but if he has a cow with swollen udder or that is wasting without apparent reason, or has a chronic cough, he can seek professional assistance in forming an opinion, or report his suspicion to a constable in his area and relieve himself of any responsibility, and in due course probably rid his herd of an animal dangerous to other animals. At any rate, he will not be fined for notifying.

During the operation of the 1913 Order for the first eight months 43,000 animals in England were examined by Veterinary Inspectors ; 3,460 were found tuberculous, and of these 2,950 came under tuberculous emaciation, 415 under tuberculous udders, and 93 as giving tuberculous milk. 209 were slaughtered by their owners without compensation, 96 received compensation in full, 2,715 at one quarter value. The total compensation paid was £7,664, and the total cost to the counties, £12,812. These figures indicate that the huge majority were in very advanced stages, and probably strikingly apparent "wasters."

It is probable that the amount of compensation received in five-sixths of these cases did not exceed ten shillings, and it is questionable whether any solatium should be given to owners who retain in their herds animals, which, long before the disease had reached the stage, probably have been disseminating tubercle germs among other stock, &c. If the day arrives for making an attempt to eradicate tuberculosis from farm-stock the retention of such an animal must be an indictable offence.

To sum up the situation, it may be recognised that much fresh light has fallen on the subject. Fallacies have been exploded, and the knowledge now available may be taken as affording a safer basis for action, but everyone intimately acquainted with the subject must realise that measures now in operation, as far as their effect on the eradication of bovine tuberculosis is concerned, can be regarded as little more than initial steps in a campaign, which, to be effective, must entail more radical methods. We take it that the educational effect will prove of great value in bringing about those conditions, which in the future may render a serious attempt at eradication practicable. The reduction in the number of animals dangerous to their fellows, because discharging tubercle bacilli and a keener appreciation of the necessity for strict observance of cleanliness accruing to measures designed for the protection of man should have a favourable effect on the incidence of tuberculosis in cattle. At the same time, though agriculturists have asked for the Tuberculosis Order, and otherwise expressed their desire to co-operate in any attempt to remove any cause of tuberculosis in man, it is felt that the cost of measures designed for the improvement of the health of the community should be made a charge on the National Treasury and not on local rates.

The Tuberculosis Order is evidently designed to be complementary to the Milk and Dairies Acts, 1915 and 1922, in the interests of human health, but if the combined provisions are rendered generally operative the incidence of tuberculosis in cattle can scarcely fail to be favourably influenced. When the stockowner is thoroughly convinced that bovine tuberculosis is a cause of serious loss to the industry, it may be an additional incentive to give that active co-operation on which the success of such an Order so largely depends.

VII.- THE IMPROVEMENT OF POOR PASTURES—WITH SPECIAL REFERENCE TO THE MANURING OF ACID PASTURES.

(*By T. Wallace*).

In the previous report on these experiments, an account was given of the reasons for the initiation of the experiments by the Society, the scheme adopted was explained, and a progress report on the work carried out and on the results obtained in 1924 was included.

It was shown in that Report how the experiments had followed as a natural development of the Society's experiments on 'The eradication of bracken from moorland pastures,' in which experiments it had become obvious that the problem of bracken eradication, from the practical view point, could not be considered apart from that of the simultaneous improvement of the treated areas by suitable manurial means.

As it had been shown that the soils of the bracken infested areas examined were, without exception, acid and had re-acted to phosphatic dressings, the scheme of manurial experiments evolved was designed to discover whether various types of phosphatic manures, when used alone, or in conjunction with lime, could be relied upon to produce substantial improvement in the herbage of pastures on various classes of acid soils, and whether dressings of lime, without the further application of other kinds of manures, would prove beneficial in such cases.

Eleven centres were selected for experiment up to the summer of 1924, and of these, nine centres were treated with manures under the adopted scheme of treatments during the spring of 1924. The remaining two centres were to receive the dressings during the following winter. During 1924, improvements were noted at some of the centres from certain of the treatments given, and these results were summarised in the Report, but no conclusions were advanced, as the ultimate action of manures on pastures cannot be judged during the first season following the application of the dressings.

Some data relating to the soils were presented to show how the soils were representative of important types of soils occurring in a wide area around Bristol.

PROGRESS REPORT FOR 1925.

Soils.

Soil samples were taken from the plots at Rodhuish and Pencombe during December, 1924, and these have been subjected to analysis in the laboratory to obtain data of a similar character to those reported in the last report for those from the other centres.

In addition, the plots at Backwell, Frampton Cotterell, Malmesbury and Pewsey, were visited in the very early spring before the growth of herbage had commenced, and soil samples were taken from each of the treated plots for the purpose of studying the effects of the manurial treatments on the soils. These investigations are being carried out by Mr. A. W. Ling, of the Bristol University

Advisory Centre. The sampling will be repeated in the early spring of 1926, when further determinations will be made.

It is proposed to withhold publication of the soil data accumulated since the publication of the last report until the soil studies are completed, when the whole of the data will be presented and discussed in relation to botanical data which are also being amassed from the plots.

Field Operations.

Manures were applied to the plots in accordance with the scheme of dressings at Rodhuish and Pencombe on December 8th and 16th, 1924, respectively. The dressing of ground lime in each case was at the rate of 2 tons per acre.

At Rodhuish, in addition to these plots, a plot one quarter of an acre in area, situated alongside the usual series, was dressed with steamed bone flour at a rate calculated to supply 150lbs. of P_2O_5 per acre, thus allowing of direct comparison with the standard plots. One half of this plot was crossed with kainit at 4 cwts. per acre, whilst an area of one-eighth of an acre received only the kainit dressing. These plots were laid down in conjunction with the Agricultural Staff of Somerset County Council.

At Pencombe, two bracken infested plots, each one half of an acre in area and situated in the same field as the manurial plots, were marked out for the purpose of carrying out the following treatments.

Plot A.—To be dressed with basic slag to supply 150lbs. P_2O_5 per acre and the bracken never to be cut prior to September in any season.

The object of the treatment is to see whether, by ensuring a good herbage, stocking will affect bracken development to any marked extent.

Plot B.—The bracken to be mown each season during the first week in July, and no manures to be applied in any season. The object here is to determine whether, by clearing the bracken and keeping the cleared area well stocked, significant improvement of the herbage will result.

The dressing of basic slag was applied to the former plot on December 16th, 1924, whilst the first of the cuttings under the scheme was carried out on July 4th, 1925.

Observations on the Herbage of the Plots—Season 1925.

Certain of the more easily accessible plots were visited on several occasions during the season, but it was only possible to visit the outlying plots on one occasion.

A tour of inspection of the plots was made by Major C. P. Ackers, Steward of Experiments, Capt. F. H. Storr, Secretary of the Society, and the writer, during September.

The observations recorded on these visits are summarised below :

Malmesbury, Wilts—No. 1.

This plot was visited on three occasions during the season, the last of these being on September 10th. There was no improvement from any treatment up to that date.

Malmesbury, Wilts—No. 2.

Visits were paid on the same dates as to No. 1 plot. The field in which the plots are situated has been practically unstocked during the season, and the herbage was very coarse and of an unpalatable nature. When visited in September, it was noted that on each of the phosphate treated plots, wherever there were patches free from coarse grass, clover was abundantly developed. There was no evidence of improvement from lime used alone or when applied with the various phosphates.

It seems certain that if steps be taken to keep the plots free from coarse herbage during the growing season, all the phosphatic dressings will effect considerable improvement. The farmer has promised to keep the coarse herbage in check by cutting during 1926.

Pewsey, Wilts.

Reference to the 1924 Report will show that some improvement from the manures—especially from basic slag—was recorded in September of that year. When visited in September, 1925, the plots had not been grazed recently, and the grass had grown rankly over a large area of the plots.

Substantial improvement was noted on the plots dressed with slag plus lime and slag only, on which plots there was a good development of clover.

Some improvement had resulted from the treatments superphosphate plus lime and mineral phosphate plus lime, but very little from superphosphate alone and practically none from mineral phosphate alone.

Some benefit appeared to have resulted from the use of lime in conjunction with phosphates at this centre, but lime alone treatment had not produced any noticeable effects.

Backwell, Somerset.

Substantial improvement was reported at this centre in 1924.

The results showing in 1925 have again been very striking. Very marked improvement has resulted from the slag and superphosphate treatments, the effects from mineral phosphate being much behind these. On September 8th, it was noted that both of the slag plots carried strong growths of clover and grasses over their whole areas, and that the herbage was well grazed by the stock.

Over the whole of the area of the superphosphate plots, the herbage had been closely eaten down and consisted very largely of a very short growth of white clover. It seemed evident that the stock had grazed these latter plots very much more closely than the slagged plots in the initial stages of the experiment. On both the slag and superphosphate plots, the herbage on the limed ends was perhaps slightly better than on the unlimed ends.

The improvement noted on the mineral phosphate alone plot was fair, but much behind the slag and superphosphate plots, whilst where lime had been given with the mineral phosphate, the condition of the herbage was practically as poor as on the untreated plots.

Lime used alone had not exercised any observable effect.

Bridgtown, Somerset.

The amount of improvement recorded at this centre in 1924 was only very slight. The plot was visited in 1925 on September 9th. On that occasion the pasture had not been recently stocked and was in need of grazing.

There was a nice growth of grass and clover even over the untreated strips and on the untreated areas surrounding the plots.

It was noted that the growth of grass and clover was more luxuriant over the limed half of the plots than over the unlimed, but as this condition persisted over the ends of the limed strip, it is doubtful whether this can be attributed to lime treatment.

All the phosphatic treatments appeared to have produced slight increases in clover development over the areas not receiving phosphates, but these were not marked. The writer is of opinion that the marked improvement noted on the unmanured plots in this experiment since 1924 is due to the dressing of basic slag which was applied to this field prior to the laying down of the experiment and which was reported as having effected no improvement during the period of three seasons following its application.

Shepton Mallet, Somerset.

Marked improvement was reported at this centre in 1924 from superphosphate and slag treatments.

During 1925, the field was used for hay. The centre was visited in March and again on September 8th. On both occasions the effects of the manures were easily discernible. On September 8th the superphosphate plots—as on previous occasions—were the most closely grazed and were covered with a closely grazed mat of white clover. Clover development on both of the slag plots was also excellent, whilst the grasses were of an excellent green colour and appeared to be of good quality. Both plots were well grazed.

The mineral phosphate plots also showed improvement over the untreated plots. Clover development was better on the unlimed half than on the limed.

The herbage of the untreated and lime alone plots stood out in marked contrast to that on the phosphate plots, showing a bronzed appearance and containing practically no clover.

Woolaston, Gloucestershire.

Significant improvement was effected in 1924 from basic slag treatment, and slight improvement was noted from mineral phosphate.

The plot was inspected on September 8th, 1925. As in 1924 marked improvement was only noted on the slagged plots. The only other plot on which noticeable effects had been produced was the plot receiving mineral phosphate alone.

The slag alone plot was closely grazed over the greater part of its area and there was much clover development. The limed end of the slag plot had not been grazed so closely by the stock, and not more than 20% of the area had been closely eaten down. The herbage on the mineral phosphate alone plot was only eaten down over about 10% of its area. There was possibly a slight improvement effected by the superphosphate plus lime treatment. No effects were observed on the superphosphate alone and mineral phosphate plus lime plots. Lime alone had not produced any visible effects, and the plots receiving this treatment were wholly ungrazed. The untreated plots were also ungrazed.

A plot adjoining the series was dressed in spring, 1924, with ground limestone at the rate of 1 ton per acre. On this area also no improvement has been effected by the treatment.

Frampton Cotterell, Gloucestershire.

Some improvement from all the phosphatic manures was reported at this centre in 1924.

During 1925 the field was used for hay. The centre was visited on September 8th, on which occasion the following observations were made.

The herbage of the whole of the pasture was very closely grazed. No marked result was noted from any of the manurial treatments. There was a slightly better development of clover on all the phosphate plots than on the unmanured and lime alone plots. Possibly the results from slag and mineral phosphate were slightly better than from superphosphate.

No effects from lime treatment were observed.

Acton Beauchamp.

Improvement at this centre was reported for 1924.

The plots were inspected in 1925 on September 7th. On that occasion the herbage on all the plots was in an ungrazed condition as it had not been possible to stock the field before that date.

The herbage on all plots was excellent and contained a luxuriant development of clover. Even on the unmanured plots clover was growing fairly abundantly.

The herbage appeared to be best on the slagged plots, shading off across the plots through the superphosphate plots to the mineral phosphate plots. On the lime alone plots there was a good development of clover, and these plots were superior to the untreated plots.

It was stated that the portion of the field above the plots had been slagged during the previous winter, and there is some doubt as to whether the drill had not been taken across the top (limed portion) of the plots. If this were so, then the lime alone plots would have received slag in addition to the lime dressing.

From inspection outside the plots, it appeared certain that the lime had effected improvement in conjunction with the phosphatic dressings.

There is no doubt as to the effectiveness of all the forms of phosphatic manures in effecting improvement at this centre.

Rodhuish.

1925 was the first season following the application of the manures, and hence improvement at this centre is not so far advanced as at those previously described.

The plots were inspected on September 9th. There was no very marked improvement on that date, but there was evidence that the manures were having effect. The colour of the herbage on both of the slag plots stood out as bright green, in contrast to the adjoining unmanured strip on which the herbage showed the typical dull bronzed tinting, characteristic of phosphate starvation. The slagged plots had been grazed fairly closely, but there was no clover development. The condition on both of the superphosphate plots was similar to that on the slagged plots, the good green colour being pronounced. Perhaps the plots had not been so well grazed as the slagged plots. Of the two mineral phosphate plots, the unlimed one was rather better than the limed, being similar in condition to the slagged plots, though perhaps rather more closely grazed.

The plot receiving bone flour alone was the best plot of the series. It was well grazed and showed a little clover development. It is possible that this portion of the field is naturally better than the area on which the other plots are situated. The plot receiving bone flour plus kainit was not so advanced as the bone flour plot. No result showed on the plot receiving kainit alone.

Lime treatment had not produced any noticeable effects.

Rate of improvement at this centre will doubtless be retarded by the thick mat of moss which covers practically the whole area of the plots.

Pencombe, Herefordshire.

Although this was only the first season for this centre, certain of the treatments have produced very marked effects. The best plot was that which had received slag alone. This plot was closely grazed and the herbage contained an abundance of white clover. The slag plus lime plot was not so good. There was a good development of clover on it, but it was only poorly grazed.

Superphosphate alone showed practically no result, but on the superphosphate plus lime plot there was a fair growth of clover, though only a small proportion of the plot was eaten down. It was similar to the slag plus lime plot. On the plot receiving mineral phosphate only, clover was much in evidence and it was well grazed. The improvement shown was possibly of the same order as that on the slag plus lime plot.

The herbage on the mineral phosphate plus lime plot was poor and of starved appearance. The soil of this plot possibly differs from that of the other plots, as the natural growth of herbage over its area appears to be much less vigorous.

Lime has not effected any improvement so far at this centre.

Special Plot A.—Slagged but Bracken Uncut.

The herbage had responded markedly to the slag treatment. There was an excellent development of clover and the area had been well grazed.

The height of the bracken plants, which were distributed in thick clumps over the whole area with the exception of a small bare patch in the north west corner, varied from 9 inches to 2 feet. A narrow strip of bracken running diagonally across the plot from north east to south west, had been cut in error in July.

Special Plot B.—July Bracken Cutting Plot.

When visited in September, there were a few fronds to be seen scattered over the plot averaging about 9 inches in height.

The herbage consisted of a fairly long, rather coarse growth of grass, which had not been grazed by the stock, and was typical of the other untreated areas of the field.

SUMMARY.

1. The contents of the previous report on these experiments are briefly referred to, and a progress report on the experiments for the season 1925, including an account of soil work, field operations, and observations on the herbage of the plots, is presented.

2. The action of the manures to September, 1925, as judged by observations on the herbage of the plots, may be summarised as follows :—

a. At all centres, with one exception, improvement to the herbage has resulted from some form of phosphatic manure.

In seven cases the amount of improvement effected by some form of phosphate has been considerable, whilst in three cases it has only been slight.

b. Of the three phosphatic manures used at the centres, basic slag has been the most consistent in producing good results.

c. At two centres, superphosphate used alone and in conjunction with lime, has effected marked improvements. At certain other centres, superphosphate plus lime has been effective, whereas, superphosphate used alone has not given good results.

d. The action of the mineral phosphate has been erratic, and there are cases where lime may possibly have exercised a deleterious effect in the initial stages when used in conjunction with it.

e. Only at one centre does lime used alone appear to have effected improvement. At this centre the amount of improvement due to it has been much less than that resulting from dressings of the phosphatic manures. In certain cases it appears to have been beneficial when used with superphosphate, and in one instance it seems to have definitely aided the action of all three phosphatic dressings.

VIII.—THE SOCIETY'S EXHIBITION AT MAIDSTONE.

By F. H. Storr.

The Maidstone Meeting, which was held from May 28th to June 2nd, will be remembered as emphasizing the close connection which has always been maintained between the Society and the officers of the Municipality visited. The late Mr. Plowman was Mayor of Bath and Secretary of the Society, but at Maidstone the Mayor, Mr. G. Tyrrwhit Drake, acted as local secretary, and was unfailing in his devotion to the interests of the Show. At the inaugural ceremony he accused the Society of regarding Kent rather as a M.F.H. might regard an outlying covert, a preserve to be guarded carefully from trespassers, but not to be visited too often. He hoped that the present Show would, at any rate, have the effect of bringing the Society to Kent before too long an interval had elapsed. On the last occasion that a visit had been paid to Maidstone in 1884, the uncle of the President, Viscount Holmesdale, had been President of the Society, and since that date the Show had nearly doubled in size and importance.

The Show was held in conjunction with the Kent County Agricultural Society, whose officers gave every help in their power towards making the Show a success. The large membership of the County Society may have had a considerable effect in reducing the numbers of visitors paying for admission, so that the total recorded at the turnstiles, a small one, probably does not do justice to the actual number of visitors to the Show Yard. The site chosen was in every way suitable, being easy of access, level and not unduly damaged by rain.

The Stock entries showed a big increase over those at any previous Show held in Kent, and this was true even in the Horse classes, though the exhibits of heavy horses were not up to the usual standard of the Society's Meetings. For the first time for many years judges have been asked to give a short appreciation of the classes they judged. It was not possible to obtain reports in more than a few cases, but those given below will show to what a high standard the exhibits attained. On the second day of the Show the Stock was paraded according to breeds in the judging ring. This proved to be a useful and popular innovation, and provided an opportunity to those interested in a special breed to examine the prize-winners at their leisure.

KENT OR ROMNEY MARSH SHEEP.

Seeing that the Show was held in Kent and in conjunction with the County Agricultural Society, it was not surprising that the local breed of sheep put up such a representative show, not only numerically, but from the point of view of quality also.

Commencing with the class for two-shear Rams in which there were nine entries, the winning sheep were all that could be desired, having plenty of growth and weight, standing on good legs and carrying dense even fleeces.

The class for Shearling Rams was exceptionally strong although it was not difficult to pick the leader, a sheep of wonderful growth for his age, extraordinarily well covered and having one of the most desirable virtues, a very even fleece, he was eventually awarded the male championship against his flock companion, the winning Two-shear. Second and third prize honours were awarded to sheep from the same flock, that of Mr. J. Egerton Quested, who had a wonderful and well merited run of success ; they were sheep of great size, but were not so well covered or so evenly fleeced as the leader. Mr. Ashley Stevens secured the other two prizes with sheep which were not quite so forward as the leader ; the fourth prize ram, however, had a very nice quality fleece. and may do better at some of the later shows when he has developed more.

Pens of Five Shearling Rams were very good and showed throughout, what is desired by all breeders, great flock likeness. Very little separated the two leading pens, but the five eventually placed first came to hand rather better.

The Ram Lambs were shown in pens of three, and looking to the fact that lambing in Kent flocks does not commence until the second or third month in the year, it was particularly noticeable how exceptionally well grown and fleshed these youngsters were. The winning trio had a clear lead, and the majority of the lambs in this class had those desirable points, well covered heads, plenty of bone and the promise of growing into good typical sires.

Pens of Three Shearling Ewes made a brave entry, the sheep being particularly well fleshed and carrying good even fleeces on large roomy frames, the latter point, in the judge's opinion, being especially important, these "maidens" being future matrons of a breed where size has always rightly been considered an attribute.

The Ewe Lambs were a nice typical class, showing every promise of later developing into good big ewes.

The judge, while noting with gratification the all round merit and constitution of the exhibits put before him, would especially emphasize the necessity of breeding for size and what our friends from over-seas require—sheep covered from "top to bottom" with good, dense, even fleeces.

Signed : HARRY T. GREENSTED,
Judge.

GUERNSEY CATTLE.

The Cow class was good, the first prize a real champion animal of very excellent quality, and both the second and third prize Cows of real good quality.

The Three-year-old Heifers were not strong in numbers, but the first and second prize animals were of real good quality.

Two-year-olds were rather a weak class, one good heifer only, the first prize winner.

Yearling Heifers were a strong class of excellent quality and great promise, the three first, second and third prize winners were excellent, the first and third prize winners by the same sire.

Old Bulls not a strong class, but two good bulls forward. The Two-year-old Bulls made a strong class, the first prize and second were of excellent quality. Yearling Bulls were a promising lot with the first prize bull standing clear away from his rivals. It may be interesting to note that the second prize Old Bull and the first prize Two-year-old Bull were sired by Roberts Boy's Sequel, the first prize Yearling Bull, the first prize Yearling Heifer and third prize same class were sired by a son of Roberts Boy's Sequel. The Old Bull was only put away at 14 years 2 months old, a month ago.

Signed : CHARLES RICHARDSON,
Judge.

MIDDLE WHITE PIGS.

I can honestly say that I was very much impressed with the great number and the quality of the exhibits.

With the exception of the Old Boar class the others were of the highest standard and must have been a record for the Bath and West Show.

The Boars born in 1925 were a very strong class, both in numbers and quality, and I think I could have awarded another three prizes had they been split up into two lots.

The Old Sows were very good indeed, the first and second prize Sows were outstanding from the others, and I feel sure will have further successes.

The Young Sows born in 1924 were exceptional, and would have done credit to any R.A.S.E. Show. I had no difficulty in placing first and second, but the third and reserve ran one another very close, though I felt quite satisfied after a second inspection.

The 1925 pair of GILTS was also a good class, but were more difficult to judge, being rather uneven in growth. There were one or two pens of very nice quality—pigs that lacked the growth of the winners.

Signed: W. W. BUCKLEY,
Judge.

DEXTER AND KERRY CATTLE.

I am pleased to report that the three Kerry Classes I judged at Maidstone were well filled and had in them some excellent specimens of the breed.

The first prize Kerry Cow and the first prize Kerry Bull were outstanding winners and were two of the best animals I have seen for some years.

The Kerry Heifer class was especially good, 12 out of 13 entries being forward. The first, second and third prize animals in this class were very typical specimens, and thoroughly deserved their positions.

(NOTE.—It may be of interest to record that these three Heifers were placed in the same order by three different judges at the Surrey Show, the Bath and West and the Royal Counties.)

DEXTERS.

In the Cow classes, 10 out of 11 entries came forward, and there were some capital specimens of the breed in this Class. The first and second prize Cows were exceptionally good, with very fine udders.

The Heifer class had an exceptionally strong entry of 16, and 14 of these were forward. I have never seen a better Class of Dexter Heifers at any Show and the quality was extremely good. The first and second prize exhibits were choice animals, and many others would have been in the Prize-money if the competition had not been so severe.

The Class for Dexter Bulls, calved 1922, 3 or 4, was very good, and the leading Bull an outstanding winner.

Referring to the Yearling Dexter Bull class, the three leading animals here again were of very nice quality and type, and thoroughly deserved their awards.

Signed: E. P. F. Sutton,
Judge.

ENTRIES OF LIVE STOCK AND FARM PRODUCE.

	Maidstone. 1884	Rochester. 1910	Maidstone. 1925
HORSES—(with boxes)			
Agricultural	54	26	46
Hunters, Hacks and Ponies ..	33	61	78
	——87	——87	——124
CATTLE—			
Devons	36	24	14
South Devons	—	31	20
Shorthorns	70	71	29
Dairy Shorthorns	—	—	46
Herefords	36	36	18
Sussex	78	41	50
Aberdeen-Angus	—	34	24
British Friesian	—	—	58
Red Poll	—	—	17
Welsh Black	—	—	17
Ayrshire	—	—	13
Jersey	77	109	57
Guernsey	60	30	69
Kerry	—	2	25
Dexter..	—	30	39
Dairy	3	43	106
	——360	——449	——602
SHEEP	208	235	195
GOATS	—	—	44
PIGS	86	134	335
POULTRY	613	536	415
FARM PRODUCE—			
Cheese	—	41	27
Butter and Cream	—	65	52
Cider	—	37	41
Hops	45	14	25
	——45	——168	——145
	1399	1609	1860

IMPLEMENTS.

The display of implements and machinery, though not quite so extensive as at Taunton, was considerably larger than at any of the Society's previous Shows in Kent. There was, perhaps, not as much differentiation in the type of implement exhibited as might have been expected in a county where farming is so specialized as it is in Kent. Dairy exhibits were less numerous than at Taunton, as was to be expected; otherwise every branch of agricultural manufacture was well represented. The comparative figures for three Shows held in Kent are as follows :—

		Maidstone 1884	Rochester 1910	Maidstone 1925
Machinery in Motion ..	feet run	994	1190	1512
Agricultural Implements ..	,,	5197	2900	1580
Other Exhibits not strictly Agricultural	,,			
Seeds, Cattle Foods, Artificial Manures, etc. ..	,,	933	1418	1449
		7124	5508	4521
Open Space for Farm and Horticultural Buildings, etc.	sq. feet	19400	23550	53672

GENERAL REMARKS.

The outstanding feature among the general exhibits was that of the Kent County Education Committee. This will be fully dealt with under the Steward's report, and it is only necessary to say here that the Society provided an extra building to accommodate the work of the Kent schools, an outlay that was fully justified in view of the extraordinary efforts and the expenses which the Education Committee had incurred.

The demonstrations of Agricultural and Horticultural Work held every year in the Show Yard are among its most useful features. Besides those connected with the working dairy, such as the Clean Milk Demonstration, the actual processes of the pruning of fruit trees, fruit grading and packing, and bee-keeping could be studied, and Major R. Alexander had planted a model forestry area, showing the types of trees to be planted according to elevation and aspect. These demonstrations drove home the lessons to be learnt from the exhibits sent by the research stations, to which Swanley, Wye, East Malling and the John Innes Horticultural Institutions contributed from the Eastern Counties, while at their special request, the Long Ashton Research Station sent a small exhibit so that the research work of the East and West of England could be compared. Altogether, some seven buildings and more than twenty thousand square feet of space was devoted to the Educational Section, in which the Society may fairly claim pre-eminence over all other Shows. The display of flowers reached a particularly high standard, which was probably well up to that of Chelsea. A word must be added as to the social side of the Meeting. Not only the Mayor, but the President of the Kent County Society had tents in the yard and entertained visitors throughout the period of the Show, while the Kent branch of the N.F.U. also made provision for their members. In spite of the absence of a local branch, the Y.M.C.A. took their usual care of the stockmen and other showyard employees, and arranged an attractive programme of Concerts. The Ministry of Labour's tent was an important adjunct to the convenience of the Society's officials and to the exhibitors, quite an unusual number of engagements being secured through its operations.

COMPARATIVE ENTRIES IN COMPETITIONS.

	Maidstone 1884	Rochester 1910	Maidstone 1925
Butter-Making (Entries now limited) ..	—	67	40
Milking	—	15	9
Shoeing	47	79	32
	47	161	81

ATTENDANCE.

Though more than 50% larger than that at Rochester in 1910, the last occasion on which the Society visited Kent, the attendance fell short of that attained in 1884, at Maidstone, and was disappointing. Enquiries made in the County and in the southern outskirts of London show that the advertisements of the Meeting were well displayed, but Londoners are proverbially bad supporters of an agricultural show. The railway company might have done more to advertise the excursion facilities, though probably the Whitsun holidays, while increasing the attendance on Whit-Monday and Tuesday, tended to lessen it on the days preceding Whit-Sunday. As suggested above, the number of ticket holders was probably in excess of the average, but given the cool but fine weather experienced, the total attendance should certainly have been larger.

NUMBERS OF ADMISSION.			ADMISSION RECEIPTS.		
Maidstone 1884	Rochester 1910	Maidstone 1925	Maidstone 1884	Rochester 1910	Maidstone 1925
44,544	25,997	38,496	£3.226	£1,902	£5,417

IX.—REPORT ON THE SOCIETY'S DAIRY DEPARTMENT AT MAIDSTONE.

By A. F. Somerville, Steward.

As in former years, the work of this Department was divided into six Sections :—

Produce ; Working Dairy ; Tests ; Sales of Produce ; Milking Competitions ; Clean Milk Demonstrations.

PRODUCE.

Cheese, for which there were 23 entries for Cheddar Cheese and four entries for Caerphilly, was judged by Mr. J. R. Allen, of Shepton Mallet, who reported very favourably on the cheeses winning prizes.

Butter, Soft Cheeses and Scalded Cream.—These Classes were judged by Miss M. C. Taylor, of the Somerset Farm Institute, who reported that most of the butters and other produce were well up to the standard of former Shows. The small amount of entries in this section may be accounted for by the absence of any instruction in the making of Cheese or Butter by the Kent County Agricultural Committee ; by the sale of milk being the chief dairy industry in the counties round the Metropolis ; and by the distance from the West of England from which most of the cheeses and butters come.

Working Dairy, which was under the control of Major A. H. Gibbs as Steward, was staffed by ladies from the East Anglian Agricultural Institute, Chelmsford. Miss A. Matthews was Chief Assistant, and she was assisted by Miss W. Woods, Miss Learmouth, and, for part of the time, by Miss Rigby. There were only 41 competitors for the Butter-Making Classes, the small number of entries being due to the reasons given above ; but it will be seen from the report of the judge, Mrs. E. C. Stevens, that the work done was well up to the standard shown at former shows of the Society.

BUTTER-MAKING.

The standard of work in this section, in spite of the reduced number of entries, was, in my opinion, quite up to that of previous years, and the prize-winners in each class were fully worthy of their awards. In the Novice Class (247) there were seven competitors, all of whom were careful workers and show promise of future good work, while in that for farm workers (248) the work was quite good. In the Student's Class there were eight competitors, all of whom were quite up to the usual average. The prize-winners in particular showed evidence of careful and thorough teaching, and, with further experience, should do well in future competitions. In the Champion Class there were eight competitors. The test given to this class was considerably more severe than in the previous competitions, and it was satisfactory to see that those who had attained to the honour and ordeal of churning in this class, through awards gained in the Novice, Student and Farm Worker classes, rose to the occasion and did most creditable work.

The work of the champion is deserving of special praise, for it was a perfect exposition of perfect butter-making, and in this particular it is of interest to find on comparing my book for Plymouth, 1922, when I had the honour of judging this section, that the champion of this year was awarded 96½ per cent. as against the 95½ per cent. of the champion of that year.

ELIZABETH C. STEVENS.

As in former years, the Working Dairy proved to be a great attraction to visitors to the Show, who showed a keen interest, not only in the competitions, but also in the demonstrations, which included the making of soft cheeses—Gervais, Coulomnier, Cambridge and Cream Cheeses and the making of clotted cream and junkets.

The cream for the Working Dairy was chiefly provided by the Mascot Court Creamery Co., Tonbridge, but some was obtained from milk bought in the yard.

Messrs. J. and E. Hall, Ltd., provided the ice required for the competitions and tests from their stand in the Show Yard where it was made.

TESTS SECTION.

The cows in the milking trials and butter tests were weighed on the evening of the first day and divided into two classes; those under 950 lbs. live weight being placed in one class and those 950 lbs. and over live weight in the other.

The cows were stript at 5 p.m. on the second day and milked at 7 a.m. and 5 p.m. on the third day, second milkers being taken half an hour later on each occasion.

A new departure has been made in calculating the points given for butter fat, based on the fact that all milk sold must contain at least 3 per cent. of butter fat. To give 12 points to a milk which contains only the legal minimum of butter fat, as is generally done on the basis of 4 points for each 1 per cent. of butter fat, is absurd, and it has therefore been decided to give points only where the butter fat exceeds 3 per cent. In cases where milk is disqualified for containing less than 3 per cent. butter fat, a more correct figure is given in the tables by deducting points for each 1 per cent. butter fat below the standard.

MILKING TRIALS.

There were 48 entries, but of these 13 were absent or withdrawn owing to the animals being ill.

Of the 35 left, 19 were in Class 142, under 950 lbs., and 16 in Class 143, 950 lbs. live weight and over.

The milks were weighed in the yard and taken to the test room where they were tested immediately by Mr. R. J. Kerr, Secretary to the Somerset and North Dorset Milk Recording Association, Yeovil. The Gerber Tester was used, and 4ozs. milk were taken at each milking for samples.

This year a new feature was introduced in these trials by points being given for B. F. as shewn by the Gerber Tester. The points awarded were given on the following basis :—

The weight of each milking was multiplied by the ascertained B.F. per cent. ; the result was then divided by three (which represents the 3 per cent. B.F. "standard" ; from this result was deducted the weight of the milk ; and the balance then given represents the points allowed for the actual B.F.

e.g. : A cow gives 25 lbs. milk morning, with 4 per cent. B.F. ; 15lbs. evening, and 5.5 per cent. B.F.

Morning $\frac{25 \times 4}{3} = 33.3$lbs.
Deduct 25.0
8.3 = points for B.F. morning.
Evening $\frac{15 \times 5.5}{3} = 27.5$
Deduct 15.0
12.5 = points for B.F. evening.
Total Milk—40 lbs. B.F. = 20.8 ; Total points, 60.8.

This will represent the extra weight of milk required to give the same weight of B.F., if the milk only yielded 3 per cent. B.F.

It will be observed that no points are given for 3 per cent. B.F., and points will be deducted if the B.F. is below 3 per cent.

The Tables on pages 106—107 give the results of the Milking Trials.

MILK TESTS.

No.	Exhibitor and Cow.	Breed.	Date of Birth.	Date of last Calf.
	CLASS 142			
428	G. Berry, "Postmistress"	Jersey	23/1/22	19/1/25
429	G. Berry, "New Year's Dinah"	Jersey	1/1/21	14/12/24
430	G. Cross, "Hamletta's Queen"	Jersey	10/3/18	12/3/25
431	Mrs. Evelyn, "Wotton Reluskia"	Jersey	11/7/17	14/1/25
433	E. A. Strauss, "Sultan's Remembrance 6th"	Jersey	16/3/14	15/3/25
434	E. A. Strauss, "Kingston Amira"	Jersey	12/4/21	8/3/25
435	E. A. Strauss, "Kingston Fairy"	Jersey	12/6/19	26/3/25
436	R. Bruce Ward, "Miranda's Lass" ..	Jersey	5/11/19	10/3/25
437	R. Bruce Ward's "Progress"	Jersey	4/7/18	18/1/25
438	R. Bruce Ward, "Darigold"	Jersey	30/3/22	2/5/24
441	G. Cross, "Eastern Queen Laxton" ..	Jersey	15/2/17	14/4/25
445	Mrs. C. S. Oliver, "Dorothy"	Jersey	8/1/20	18/1/25
447	Mrs. H. Briggs, "Volunteer's Remembrance 3rd"	Jersey	24/7/22	29/1/25
486	Mrs. F. H. T. Jervoise, "Mabel of La Ramee"	Guernsey	22/11/19	13/3/25
487	E. G. MacAndrew, "Dairymaid 2nd of L'Eclet"	Guernsey	27/1/19	24/1/25
550	Kerry Estates Ltd., "Ruby of Carton" ..	Kerry	13/5/18	15/3/25
551	Kerry Estates Ltd.," Valencia Eileen 3rd"	Kerry	14/3/16	6/5/25
576	Lt.-Col. W. O. Gibbs, "Barrow Bee 6th" ..	Dexter	23/6/21	23/5/25
619	H. C.Pelly," Remember Flo 3rd" ..	Jersey	30/8/20	12/4/25
	CLASS 143			
186	Maj. G. Kelsey Burge, "Rickerscote Red Rose 2nd"	D. Shrthrn.	8/8/18	1/5/25
300	A. and J. Brown, "Hedges Gemke Brand"	B. Friesian	14/10/16	24/2/25
304	The Hache Herd, "Hache Berbram Umbra"	B. Friesian	8/4/20	16/5/25
305	The Hache Herd, "Colton Pebble" ..	B. Friesian	2/8/19	20/5/25
306	G. Holt Thomas, "Colton Sunray" ..	B. Friesian	31/10/18	19/3/25
309	F. and T. Neame, "Macnade Event" ..	B. Friesian	29/5/18	1/5/25
310	F. and T. Neame, "Macknade Jem" ..	B. Friesian	23/2/18	6/4/25
312	F. Sykes, "Kingswood Ceers Daisy" ..	B. Friesian	21/11/19	12/2/25
383	Lt.-Col. W. Elwes, "Harefield Lupin" ..	Red Poll	10/8/18	
384	Viscount Folkestone, "Longford Victorious"	Red Poll	16/4/21	6/2/25
385	Viscount Folkestone, "Longford Ruby" ..	Red Poll	19/8/15	25/4/25
386	Maj. J. A. Morrison, D.S.O., "Sudbourne Comfit"	Red Poll	10/8/16	27/3/25
416	Lt.-Col. R. E. Cecil, D.S.O., "Eglinton Mains Blossom"	Ayrshire	2/10/19	24/2/25
479	A. C. Beatty, "Lizette of S. Catherine" ..	Guernsey	20/6/18	7/6/24
481	A. C. Beatty, "Golden Queen of Goodneston"	Guernsey	31/8/16	10/4/25
615	Lt.-Col. A. Delme-Radcliffe, D.S.O., "Pollen"	D. Shrthrn.		28/3/25
621	G. T. Eaton, "Eastfield Blackberry" ..	B. Friesian	2/12/15	7/3/25

Special Prize of £50 offered by the British Friesian Cattle Society.
Won by No. 306—"Colton Sunray."

MILK TESTS.

No. of days in Milk	Yield of Milk.						Points.			Total.	Award.
	Morning		Evening		Total.		Lactation.	Milk.	B.F.		
	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.					
130	23	2	16	4	39	6	9.0	39.375	33.0	81.375	First Prize.
166	21	0	15	10	36	10	12.0	36.625	12.9	61.525	
78	18	4	16	8	34	12	3.8	34.75	4.9	43.45	
135	17	4	13	6	30	10	9.5	30.625	26.3	66.425	
75	25	0	18	4	43	4	3.5	43.250	29.3	76.05	Third Prize.
82	20	8	15	12	36	4	4.2	36.250	21.0	61.45	
64	13	10	12	8	26	2	2.4	26.125	33.5	62.025	
80	24	0	18	10	42	10	4.0	42.625	21.6	68.225	
131	18	4	15	2	33	6	9.1	33.375	27.6	70.075	Reserve.
392	15	0	14	8	29	8	12.0	29.5	18.4	59.9	
45	23	2	17	0	40	2	.5	40.125	22.2	62.825	
131	16	12	12	4	29	0	9.1	29.0	27.4	65.5	
120	14	0	10	12	24	12	8.0	24.75	10.9	43.65	
77	15	14	13	2	29	0	3.7	29.0	17.1	49.8	
125	19	14	14	12	34	10	8.5	34.625	22.0	65.125	
75	23	8	18	12	42	4	3.5	42.25	1.6	44.15	Disqualified. Fat below Standard M.
23	27	8	21	0	48	8	Nil	48.5	13.5	62.0	
6	15	0	10	4	25	4	Nil	25.25	19.8	45.05	
47	28	12	21	12	50	8	.7	50.5	25.5	76.7	Second Prize.
	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.					
28	23	12	22	4	46	0	Nil	46.	7.2	53.2	Disqualified. Fat below standard M.
94	32	6	26	4	58	10	5.4	58.625	5.9	69.925	Commended.
13	34	4	29	8	63	12	Nil	63.750	8.6	72.350	Reserve.
9	30	6	22	8	52	14	Nil	52.875	15.0	67.875	Commended.
71	40	12	29	0	69	12	3.1	69.750	16.5	89.35	First Prize.
28	40	2	29	0	69	2	Nil	69.125	6.1	63.025	Disqualified. Fat below standard M.
53	43	10	34	0	77	10	1.3	77.625	7.0	85.925	Disqualified. Fat below standard M.
106	37	8	29	12	67	4	6.6	67.250	13.9	87.750	Second Prize.
											Absent Sick.
112	19	8	14	4	33	12	7.2	33.750	9.1	50.05	
34	28	12	20	0	48	12	Nil	48.750	9.0	57.75	
63	35	12	26	8	62	4	2.3	62.250	16.0	80.55	Third Prize.
94	22	8	17	12	40	4	5.4	40.250	6.6	52.25	
356	18	0	13	8	31	8	12.0	31.500	15.9	59.4	
49	26	10	18	4	44	14	.9	44.875	14.7	60.475	
62	31	2	23	2	54	4	2.2	54.250	12.2	68.65	Commended.
83	41	12	26	0	67	12	4.3	67.750	7.4	79.45	Disqualified. Fat below standard M.

BUTTER TEST.

PARTICULARS OF COWS TESTED, YIELDS OF MILK AND BUTTER, AWARDS, ETC.

No.	Exhibitor and Cow.	Breed.	Date of Birth.	Date of Last Calf.
	CLASS 144			
428	G. Berry, "Postmistress"	Jersey	23/1/22	19/1/25
429	G. Berry, "New Year's Dinah"	Jersey	1/1/21	14/12/24
430	G. Cross, "Hamletta's Queen"	Jersey	10/3/18	12/3/25
431	Mrs. Evelyn, "Wotton Relustria" ..	Jersey	11/7/17	14/1/25
433	E. A. Strauss, "Sultan's Remembrance 6th"	Jersey	16/3/14	15/3/25
434	E. A. Strauss, "Kingstone Amira" ..	Jersey	12/4/21	8/3/25
435	E. A. Strauss, "Kingstone Fairy" ..	Jersey	12/6/19	26/3/25
436	R. Bruce Ward, "Miranda's Lass" ..	Jersey	5/11/19	10/3/25
437	R. Bruce Ward, "Progress	Jersey	4/7/18	18/1/25
438	R. Bruce Ward, "Darigold"	Jersey	30/3/22	2/5/24
441	G. Cross, "Eastern Queen Laxton" ..	Jersey	15/2/17	14/4/25
442	J. B. Lloyd, jun., "Volunteer's Darling" ..	Jersey	10/7/20	6/1/25
443	J. B. Lloyd, jun., "Dinard 6th"	Jersey	7/10/20	1/4/25
445	Mrs. C. S. Oliver, "Dorothy"	Jersey	8/1/20	18/1/25
447	Mrs. H. Briggs, "Volunteer's Remembrance 3rd"	Jersey	24/7/22	29/1/25
484	R. G. Campbell, "Bealing's Rose 5th" ..	Guernsey	23/8/21	14/3/25
486	Mrs. F. H. T. Jervoise's "Mabel of La Ramee"	Guernsey	22/11/19	13/3/25
487	E. G. MacAndrew, "Dairymaid 2nd of L'Eclet"	Guernsey	27/1/19	24/1/25
488	Messrs. C. Norman, "Hadham Marigold 4th"	Guernsey	17/3/21	23/5/25
550	Kerry Estates, Ltd., "Ruby of Carton" ..	Kerry	13/5/18	15/3/25
551	Kerry Estates, Ltd., "Valencia Eileen 3rd"	Kerry	14/3/16	6/5/25
576	Lt.-Col. W. O. Gibbs, "Barrow Bee 6th" ..	Dexter	23/6/21	23/5/25
619	H. C. Pelly, "Remember Flo 3rd"	Jersey	30/8/20	12/4/25
623	A. C. Beatty, "Calehill Golden Lady" ..	Guernsey	27/7/20	8/3/25
	CLASS 145			
300	A. and J. Brown, "Hedges Gemke Brand"	B. Friesian	14/10/16	24/2/25
304	The Hache Herd, "Hache Berbram Umbra"	B. Friesian	8/4/20	16/3/25
305	The Hache Herd, "Colton Pebble" ..	B. Friesian	2/8/19	20/3/25
306	G. Holt Thomas, "Colton Sunray" ..	B. Friesian	31/10/18	19/3/25
309	F. and T. Neame, "Macknade Event" ..	B. Friesian	29/5/18	1/5/25
310	F. and T. Neame, "Macknade Jem" ..	B. Friesian	23/2/18	6/4/25
312	F. Sykes, "Kingswood Ceces Daisy" ..	B. Friesian	21/11/19	12/2/25
384	Viscount Folkestone, "Longford Victorious"	Red Poll	16/4/21	6/2/25
385	Viscount Folkestone, "Longford Ruby"	Red Poll	19/8/15	25/4/25
386	Maj. J. A. Morrison, D.S.O., "Sudbourne Comfit"	Red Poll	10/8/16	27/3/25
416	Lt.-Col. R. E. Cecil, D.S.O., "Eglinton Mains Blossom"	Ayrshire	2/10/19	24/2/25
479	A. C. Beatty, "Lizette of St. Catherine" ..	Guernsey	20/6/18	7/6/24
489	Mrs. Howard Palmer, "Mildred 2nd of Bel Air"	Guernsey	12/2/18	21/4/25

Mr. R. Bruce Ward's Cup.
Won by No. 443, "Dinard 6th," with 51.05 points.

BUTTER TEST.

PARTICULARS OF COWS TESTED, YIELDS OF MILK AND BUTTER, AWARDS, ETC.

No. of days in Milk	Milk yield in 24 hours.		Butter yield.		Ratio viz., lbs. Milk to lbs. Butter	Points.			Award.
						Lactation.	Butter	Total.	
	lbs.	ozs.	lbs.	ozs.					
130	39	6	2	8	15.75	9.0	40.00	49.0	Second Prize and Silver Medal
166	36	10	1	10	22.53	12.0	26.00	38.00	C.M.
78	34	12	0	14¾	37.69	3.8	14.75	18.55	
135	30	10	1	15¾	15.43	9.5	31.75	41.25	C.M.
75	43	4	2	7¾	17.40	3.5	39.75	43.25	Reserved and C.M.
82	36	4	1	12¾	20.17	4.2	28.75	32.95	
64	26	2	1	13¼	14.29	2.4	29.25	31.65	
80	42	10	2	3½	19.21	4.0	35.50	39.50	C.M.
131	33	6	2	½	16.43	9.1	32.5	41.6	C.M.
392	29	8	1	9¾	18.33	12.0	25.75	37.75	C.M.
45	40	2	2	2½	18.60	.5	34.50	35.00	C.M.
143	29	4	1	12¼	16.56	10.3	28.25	38.55	C.M.
58	42	8	3	1¼	13.8	1.8	49.25	51.05	First Prize and Gold Medal.
131	29	0	1	15½	14.73	9.1	31.5	40.6	C.M.
120	24	12	1	3½	20.30	8.0	19.50	27.50	
76	35	4	1	2¾	30.08	3.6	18.75	22.35	
77	29	0	1	8¾	18.74	3.7	24.75	28.45	
125	34	10	1	15	17.87	8.5	31.0	39.5	
6	42	8	1	8¼	28.04	Nil	24.25	24.25	
75	42	4	1	4½	32.97	3.5	20.50	24.00	
23	48	8	2	½	23.87	Nil	32.50	32.50	
6	25	4	1	8¾	16.32	Nil	24.75	24.75	
47	50	8	2	11¾	18.46	.7	43.75	44.45	Third Prize and Bronze Medal
82	42	2	2	5¼	18.09	4.2	37.25	41.45	£5, Guernsey Society Prize
	lbs.	ozs.	lbs.	ozs.					
94	58	10	2	1¼	28.21	5.4	33.25	38.65	
13	63	12	1	14	34.00	Nil	30.00	30.00	
9	52	14	2	4¼	23.34	Nil	36.25	36.25	
71	69	12	2	14¼	24.12	3.1	46.25	49.35	First Prize and £5. B. Friesian Prize.
28	69	2	2	5¼	29.69	Nil	37.25	37.25	
53	77	10	2	11¼	28.71	1.3	43.25	44.55	Third Prize.
106	67	4	2	10¾	25.22	6.6	42.75	49.35	Second Prize and Reserved B. Friesian Prize.
112	33	12	1	6¼	24.27	7.2	22.25	29.45	
34	48	12	1	14¾	25.36	Nil	30.75	30.75	
63	62	4	2	7¾	25.05	2.3	39.75	42.05	Reserved and £5 Red Poll Society Prize.
94	40	4	1	8¾	26.02	5.4	24.75	30.15	
356	31	8	1	9¼	19.96	12.0	25.25	37.25	
38	52	10	2	7	21.59	Nil	39.0	39.0	Reserved for £5 Guernsey Society Prize.

The average of the yields of the various breeds, together with their average days in milk and average B.F. in these Classes, is as follows :—

Breed.	*No.*	*Milk Yields.*		*Days in Milk.*	*B.F.*
		lbs.	ozs.		p.c.
Jerseys	14	35	8	119.5	5.03
Guernseys	4	35		151.75	4.61
British Friesians	8	65	13.5	57.12	3.60
Red Polls	3	48	4	69.6	3.77
Kerrys	2	45	6	49.0	3.38
Dexter	1	25	4	6.0	5.35
Ayrshire	1	40	4	94.0	3.50
Dairy Shorthorn	2	50	2	45.0	3.57

BUTTER TEST.

Of the 37 cows which competed, 24 were in Class 144, cows under 950 lbs. live weight, and 13 over that weight were placed in Class 145. The milks were separated after each milking, and the creams were churned on the Monday morning at 7 a.m., but, as there was a difficulty in getting churners, the work was not finished till after 2 p.m. Miss Taylor supervised the preparation of the creams, which were all churned at 54 per cent., and the churning.

The Tables on pages 108—109 give the results.

In the case of cows, whose milk had been taken for samples in the milking trials, an allowance of ½oz. was made in the butters of animals showing an average of 5 per cent. B.F. on the two milkings, and ¼oz. where the B.F. was below 5 per cent.

The average results for each breed was as follows :—

Breed.	*No.*	*Days in Milk.*	*Milk.*		*Butter.*		*Milk Rates to*
		p.c.	lb.	ozs.	lb.	ozs.	*1lb. Butter.*
Jerseys	16	115.4	35	8	1	15.59	18.71
Guernseys ..	7	108.5	38	3.7	1	12.6	22.15
B. Friesians ..	7	53.4	65	9.1	2	6.4	27.61
Red Polls ..	3	69.6	48	4	1	14.9	24.89
Kerrys	2	49.0	45	6	1	10.5	28.42
Dexter	1	6.0	25	4	1	8.75	16.32
Ayrshire ..	1	94.0	40	4	1	8.75	26.02

Besides the prizes given by the Society for these Classes, special prizes were given by the English Jersey Cattle Society, gold, silver and bronze medals; a prize of £5 by the English Guernsey Cattle Society;

a prize of £5 by the Red Poll Cattle Society; and a prize of £5 by the British Friesian Cattle Society. Mr. R. Bruce Ward also gave a challenge cup to be competed for by members of the Kent Milk Recording Society, who had entered animals in Classes 144 and 145; this cup was won by Mr. J. B. Lloyd's Jersey Cow, "Dinard 6th," which also won the English Jersey Cattle Society's gold medal.

SALES OF PRODUCE SECTION.

The cold weather during part of the Show brought rather fewer customers to the Pavilion, but there was a good demand for all the produce made in the Working Dairy, and the whole of the butters and prize cheeses were disposed of at satisfactory prices, and everything was sold before the close of the Show. The Pavilion was under the charge of Miss M. C. Taylor, who was ably supported by her assistants, Miss E. Masters and Miss Mackie.

MILKING COMPETITIONS.

The cows for these competitions were kindly provided by Mr. Henry Wakefield, Cherry Grounds Farm, Maidstone, and were a very good lot of animals.

The competitions were judged by Mr. J. Mackintosh, National Institute for Research in Dairying, Shinfield, Reading, who gave some very useful and practical advice to the competitors at the end of the competitions.

There were only two classes, one for men 16 years of age and over; and the other for women of a similar age. Only nine entered, and it was disappointing to find so few entries in a county where a good many dairy herds are kept.

The work done by the competitors was good, and attention was given to right methods. A very convenient yard was provided for the competitions, which were held in the Show Yard.

My thanks are due to Miss Matthews and her staff for their assistance in the Working Dairy; to Captain Clive and Mr. Read, who again spared neither time nor trouble in dealing with the purchase of the milk from the Show Yard and keeping the Pavilion well supplied with Dairy Produce; to Miss Taylor and Mr. G. N. Rawlence, who gave me very valuable assistance in the Tests, the latter also taking charge of the milking competitions; and to Mr. Kerr, who gave his services free of charge in carrying out the testing of the milk and also kindly provided the Gerber Tester for the same.

CLEAN MILK DEMONSTRATION.

At the present time, when the question of a cleaner and purer supply of milk is so much before the public and has created so much interest, it is the duty of the great Agricultural Societies, like the Bath and West Society, to take advantage of the number of agriculturists collected in the show yard to forward the movement by giving demonstrations and lectures at their shows. For the third year in succession, a very convenient shed was erected near the Working Dairy, and two cows were kindly provided by Mr. Henry Wakefield. The demonstrations and lectures were conducted by Mr. A. T. R. Mattick, from the University College, Reading, and Captain Bakworth, from the South-Eastern Agricultural College, Wye, Kent. Demonstrations were given every day in the handling of the milk from cowshed to consumer; sterilising all the plant; bottling the milk, and the use of the covered pail, while the necessity of maintaining absolute cleanliness in dealing with milk was shown to be the foundation of success in the sale of both liquid milk and also of its products.

The demonstrations created a good deal of interest amongst farmers, and were well attended.

The special thanks of the Society are due to Mr. Mattick and Captain Bakworth, for so kindly giving their services free of any charge and providing the necessary plant for the demonstrations, also to the Reading University and Wye College authorities for kindly allowing their officials to attend the Show.

X.—REPORT ON THE FORESTRY SECTION AT MAIDSTONE.

By Godfrey Lipscomb, Steward.

Looking back to the early years of the Bath and West Forestry Section—and Swindon (1906) was the beginning, though a Forestry Steward was not appointed till the following year—I think we must all acknowledge that the effort has been repaid and feel grateful to those landowners and others who have come forward so well—often at considerable trouble and expense to themselves, to help forward the Industry of Forestry and to assist the Society in pointing out the possibilities and advantages of good forestry and the loss and disappointment that result from bad forestry. Both

Forestry and Agriculture have passed through the same experience since 1906. At that time the country was supposed to be doing quite well with imported foodstuffs and foreign timber and pit-wood, but during the war, both agriculture and forestry were suddenly called upon to fill up the gap caused by the interference with supplies from abroad. Both were then told that the safety of the nation depended on their efforts; both were congratulated on the way in which they rose to the occasion, and it was then acknowledged that both industries were really more vital to the nation's existence than had been generally grasped. Promises were made and the first steps taken to promote the well-being of these industries, but as the war years fell into the background, the promises were more or less forgotten and the efforts dwindled, till, with the exception of the Forestry Commission, we are back very much where we started. The Forestry Commission, however, seriously cramped though it is by the want of adequate funds, has done, and is doing, very valuable work—a strictly business-like and economically sound programme is being carried out by men who thoroughly know their job, and who lose no opportunity of making the most of such facilities as they have. The effort of the Bath and West has been to assist reconstruction—to point out first how good timber can be grown, and, secondly, what can be done with it when it has been grown.

At Maidstone an effort was made to widen the field covered, and break some fresh ground, and in this the Forestry Commission helped greatly. An exhibit was sent by them from the School of Forestry in the Forest of Dean. In addition to a useful and general exhibit it embodied two or three excellent models. One, a working model of a transporter in use over the River Wye, a simple machine that saves an enormous amount of labour and reduces the cost of transport. Many of us have seen such methods in use abroad, in Switzerland and Northern Italy for example. Another model was connected with charcoal burning, and showed the old and new methods; under the old method the only product was charcoal, but under the new method in addition to the charcoal some fourteen by-products are obtained, and of these two in particular, methyl acetone and acetate of lime, were in much demand during the war for the manufacture of high explosives. Another interesting exhibit was a complete set of oak wagon scantlings, showing how necessary really well grown timber is for railway work. The exhibit from the Commission was not for competition. The Gold Medal of the Bath and West and the special Silver Medal offered by the Royal English Arboricultural Society were won by an excellent general exhibit sent by Lord Stanhope—a very complete exhibit, that gave evidence of great care and thoroughness in its preparation. The silver medal of the Bath and West was taken by Major Alexander, of Swifts Place, with a capital exhibit which contained some very interesting features, including a very fine dinner table, 18ft. by 6ft., grown and made on Swifts Place, where it is in daily use. In addition to his exhibit inside the building, Major Alexander went to considerable trouble and expense to lay out two small model plantations, 30ft. by 15ft. each, outside, which were in each case modelled to indicate planting at various heights, and under various conditions and aspects, one plantation being pure conifer and the other mixed, the idea being to show the kind of planting that the exhibitor had himself found to be successful, and the writer of this Report, having had the advantage of a personal inspection of some of Major Alexander's woods, can speak as to the soundness of the forestry at Swifts Place. The results obtained are excellent, the woods being in first-rate order and the methods employed most sound and workmanlike. Sir Henry Hoare again sent his valuable contribution to the Section of some hundred named specimens of conifer foliage. The Kent Toy Industry for disabled men had a small and interesting exhibit, which attracted attention, showing the clever use to which fir cones can be put in this connection.

In the classes for Boards, Lord Carnarvon sent some useful timber from his well-known plantations, taking the first prize in each class, Major Alexander taking second. Messrs. Constance have added to and improved their excellent exhibit of hand-worked handles of all kinds, showing the process of manufacture and illustrating the varieties of timber—about twenty in number—used at their works. The Southern Railway Company kindly sent some creosoted sleepers of English timber, taken from the running lines, to show the suitability of English timber for the purpose. The Kent County Council kindly put the services of their Horticultural expert at the disposal of the Society, and Mr. Bagenall gave excellent talks and demonstrations in the Demonstration Plot outside the Forestry building, on pruning, grafting and the general management of fruit trees, apples in particular. These talks, as usual, were very well attended, and much appreciated. Altogether, the Maidstone Forestry Section was pronounced a useful one. We are much indebted to Professor H. A. Pritchard for again acting as judge.

XI.—AGRICULTURAL EDUCATION AND RESEARCH AND NATURE STUDY AND HANDICRAFTS.

By H. M. Cundall, I.S.O., F.S.A.

AGRICULTURAL EDUCATION AND RESEARCH.

The Educational exhibits generously contributed by the various Agricultural Colleges and Institutions, formed one of the most interesting features at the Society's Show. The practical manner in which agricultural instruction is being developed in the county of Kent was fully demonstrated. The value of the various exhibits was greatly enhanced by the daily attendance of professors and their assistants, who readily volunteered information to all interested visitors.

THE SOUTH-EASTERN AGRICULTURAL COLLEGE, WYE.

The extensive exhibit sent by this institution illustrated the course of instruction given to its students and was of great interest to all those associated with agriculture. The various objects were arranged under the following departments :—

AGRICULTURAL DEPARTMENT.—Manurial treatment of Potatoes ; early and late sowing of cereals ; top dressings of wheat ; influence of fat content of milk on yield of Dairy produce ; farm costs ; photographs showing experimental and Demonstration work of the department.

BOTANICAL DEPARTMENT.—Food requirements of crops and water culture experiments with different plants ; the relation of pollination to fruit setting and sterility in orchard fruits ; botanical considerations underlying propagation methods and the story of a cutting ; result of experiments with cereal crops ; the root system of a wheat plant ; Cereals grown under varying conditions.

CHEMICAL DEPARTMENT.—Retention of manures by soil ; effect of soil drainage on plant growth ; mechanical effect of lime on soil and samples of lime; impurities in good and bad quality cereal meals.

ECONOMICS DEPARTMENT.—Diagrams illustrating some of the results that have been obtained in an investigation into the costs of production and financial results in farming in the South-Eastern Counties for the year 1923-24 ; also, diagrams showing some comparative statistics of crops and live stock.

ENGINEERING DEPARTMENT.—Comprised of models used during lectures and work done by the students in the wood and iron shops.

GEOLOGICAL DEPARTMENT.—The geology of the Weald; the principle of natural springs; rock, subsoil and sedentary soil and transported soils.

POULTRY DEPARTMENT.—An exhibit demonstrating the importance of keeping stock of a good laying strain.

VETERINARY DEPARTMENT.—Various bones of horses, natural and diseased; stones from horses' intestines weighing upwards of 2½ lbs. and photographs, drawings and specimens of worms found in the stomach of sheep.

CHEMICAL DEPARTMENT.—Exhibit illustrating the chemical reactions of a combined fungicide and insecticide, namely, lime sulphur and lead arsenate spray.

The investigations have shown that:—

(1) The active fungicidal constituents of the lime sulphur are not adversely influenced.
(2) The lead arsenate is largely unaffected and the slight changes that occur do not reduce the insecticidal value.
(3) By the formation of calcium arsenate the fungicidal properties are probably increased.
(4) When used in the proportions and manner recommended, the risk of injury to the foliage is very small.

Exhibit illustrating the effect of the addition of casein to the mixed lime sulphur—lead arsenate spray.

The casein holds up the sediment which is formed when the components of the spray are brought together, and it also assists by facilitating the wetting of the leaves and fruit.

Less spray is required and the covering is more uniform.

Exhibit illustrating the different forms of colloidal sulphur for use in spraying.

Sulphur in a very fine state of division is found in these colloidal preparations.

MYCOLOGICAL DEPARTMENT.—*Specimens illustrating Fungus Diseases of Plants and their control.* The following, among others, were shown:—

The Fungous Diseases of the Hop, including the new disease known as "Downy Mildew," which appeared in epidemic form in 1924.

Grafted Hops.—Grafting is a method used in the investigation of diseases and other problems.

Apple and Pear "Scab," showing the stage recently discovered in this country which occurs on the dead leaves. Apple Scab was prevalent to an unusual degree last season and ruined the crop on many farms. The result of recent spraying experiments, shown in this exhibit, demonstrated that spraying at the right time with Bordeaux mixture, Lime-sulphur or Lime-sulphur plus Arsenate of Lead satisfactorily controls this disease.

A New "Canker" Disease of the Apple.

The "Bunt" Disease of Wheat and its control by Formalin. The increase of "Bunt" (often called "Smut" by farmers) in wheat in recent years has become a serious feature of the English crop. The old method of preventing Bunt in seed wheat by "pickling it" with copper sulphate has been found to affect very seriously the germination of the seed. It is now being superseded by a simple method of sprinkling with Formalin, which was described and illustrated.

Entomological Department.—An exhibit of various living insects attacking crops and fruit; some insects injurious to fruit; the Warble Fly in cattle; photographs showing some methods of controlling insects other than by the use of Poison Sprays.

Kent Agriculture Education Committee.—The exhibits of this Committee consisted of the following:—

Five quart bottles of milk, each with a layer of cream of increasing depth, showed how a particular cow, giving five quarts of milk at a milking, gave 1.9, 3.1, 3.7, 4.2 and 5.4% butter fat in each successive quart, the last quart of milk being much the richest. The exhibit clearly demonstrated the importance of thoroughly stripping the cow.

Four specimen winter rations for dairy cows, one each for a herd of Shorthorn, Friesian, Guernsey and mixed cows, actually fed by dairy farmers in the County, on the advice of the Agricultural Organiser, showed how a cheap well-balanced ration, costing between 7d. and 7½d. per gallon of milk, had been fed successfully. The actual quantities and prices of each feeding stuff used were shown, together with the quantities of milk obtained.

Photographs, taken on the Cup-winning farms in the 1923 and 1924 Clean Milk Competitions were exhibited, and the actual cotton wool discs used by the Inspecting Judge during his surprise visits to each of the 45 competitors in the 1925 competition. A pint of the competitor's milk had been passed through each disc and the comparative cleanness and dirtiness of the discs gave a good indication of the amount of care that had been taken in preventing dirt from getting into the milk. A chart showed that in the first competition, 16 samples of milk, in the second competition 41samples and in the third competition 93 samples had kept perfectly sweet and untainted for 4 complete days.

Grass turves, dug from experimental manurial plots on a weald clay soil at Biddenden, a sandy soil at Bedgebury, near Goudhurst, a chalk loam at Godmersham and a thin dry chalk bank at Elham, showed in a very striking manner, the good results obtained by the use of phosphatic manures on the heavy land and phosphatic in conjunction with potash on light land.

For the benefit of farmers who do not believe in the necessity of cutting thistles, two pots containing a mass of seedling thistle plants were exhibited, with a card, "Who says thistle seed won't grow ? Look !"

Chalk Weed, Manet Weed, or Devil's Cabbage (*Lepidium draba*) is a very objectionable weed that is spreading throughout Kent. In order to familiarise farmers with the weed, growing specimens of it were exhibited with the advice to dig it out immediately a patch of it made its appearance on the farm.

A turf containing a large quantity of Burr, Spotted or Calvary Clover, was exhibited; it showed how the prickly seed pods got picked up in the sheep's wool and gave trouble to the woollen factories at Bradford. In order to destroy the plant, farmers were advised to apply sulphate of Ammonia in the patches at the rate of 2cwts. per acre, when the dew was on the leaves.

A map of the County of Kent showed the position and extent of the County Council Small Holdings. There are 366 County Council Small Holdings, with a total area of 6,075 acres.

Under the Fertilisers and Feeding-stuffs Act, 1,230 samples of fertilisers and 126 samples of feeding-stuffs were examined during the past twelve months, of which 278 samples of fertilisers and 37 samples of feeding-stuffs were found to be unsatisfactory. A number of the unsatisfactory samples were staged, with explanations of their deficiencies, and it was shown that by spending 5/- on an analysis, farmers had frequently saved themselves £2 or more on every ton of the manure purchased.

Specimen heads and seed, preserved since last harvest, of a number of the newer varieties of wheat, barley and oats, enabled visitors to see their good qualities, and the comparative results of the different varieties obtained by field trials in the County were available.

A bag of mixed artificials, 1 part Sulphate of Ammonia, 3 parts Super-phosphate and 1 part Sulphate of Potash, represented a mixture of manures that had given very satisfactory results with the potato crop in the Committee's Demonstration Allotments, and allotment holders were recommended to use a similar mixture.

Specimen heads of the following varieties of Early Cabbage, grown on the Committee's Demonstration Allotment at Minster-in-Sheppey, were exhibited :--Early Market, Offenham, Early Rainham, Harbinger, Wheeler's Imperial, First and Best.

Some live poultry of the Speckled Sussex and Light Sussex, and Brown Leghorn and Light Sussex crosses, illustrated the sex-linked theory recently worked out by Professor Punnett at Cambridge, whereby it is possible, in the case of certain crosses, to detect at a day old, which chicks are destined to be pullets and which will be cockerels.

An interesting set of horse-shoes, prepared by the Farriery Instructor, and suitable for various purposes and under various circumstances, completed the exhibit.

EAST MALLING RESEARCH STATION.

SOFT FRUIT EXHIBIT.—This exhibit told the story of the work in progress and the results so far obtained with raspberries and black currants at this Station, and of which the following description was given :—

RASPBERRIES, THEIR VARIETIES, IDENTIFICATION. SUITABILITIES AND DISEASES.

Growers do not always realise that varieties of raspberries differ very widely in their economic value. Some varieties crop well in nearly all soils, whilst others are consistently poor croppers ; others again are adapted to certain types of soil, and do poorly elsewhere. They differ also in the use for which they are most suitable ; some varieties are fine flavoured and excellent for dessert, but make very poor jam ; whilst others make the best jam, but are too acid for dessert.

It happens, unfortunately, that the names of raspberries are badly mixed ; those wishing to plant a certain variety are seldom safe in ordering canes by the name alone, without first making sure that they are of the variety desired. In this connection, our experience is illuminating. If we exclude new and unnamed seedlings, those recently received, and a few from abroad, we find that our collection includes 64 names, but these names cover no less than 110 varieties. There are actually far more varieties than names. Good examples of the confusion that exists are the following :—

Eight distinct varieties are now definitely known to be grown commercially under the name " Baumforth's Seedling " ; whilst the variety " Bath's Perfection " is actually grown commercially under ten different names.

It is thus essential for raspberry planters who wish to have some prospect of success not only to find out the best variety for their purpose, but to make sure of getting that variety, and not another under the same name. Varieties of raspberries can be definitely identified during the summer and early autumn by their characteristics of growth, foliage and fruit.

The most useful characteristics are those of the new canes from June onwards ; but help can often be obtained from the fruit, particularly its shape, flavour and time of ripening. The new canes may be either downy ("pubescent ") or not downy (" glabrous ") on the wood ; this is best seen near the growing tip of the cane, where the surface of the wood can be rubbed " shiny " if it is not downy.

The colour of the spines (thorns) is also a good guide. Some varieties have spines dark coloured at the base, whilst others are pale from base to tip. This distinction is best seen before the new cane begins to colour (*i. e.*, in early summer), and more than 6 inches from the ground. The dark spines stand out conspicuously, whilst the pale ones are much less noticeable. The number and stiffness of the spines, as well as their length, is also useful in identifying certain varieties ; but like many other characters it varies very much with the conditions in which the canes are grown.

The pose, shape, smoothness or crinkling (" rugoseness ") of the leaves, as well as the degree of their " curl " or convexity, are also useful. These vary greatly from May to September even on the same cane, and are different in dry and wet seasons ; but some varieties can be put down as consistently having curled crinkled leaves, whilst others always have comparatively flat smooth leaves.

Combinations of all these characters, with the shape and season of ripening of the fruit, and sometimes its flavour, will serve to identify most of the important varieties of raspberries.

In a few cases, as, for instance, between Baumforth B and Reader's Perfection, the distinction, though plain enough to the trained eye, is very slight and quite indescribable in words. But such cases are the exception, and can be overcome by a little experience with the varieties concerned.

Some advice as to choice of variety may be given, but with the warning that results obtained in our conditions at East Malling may not necessarily be duplicated elsewhere. In our conditions, out of 35 varieties cropped for two years or more, the ten which have cropped most heavily come in the following order :—Lloyd George, Red Cross, Paradise Berry, Helston, Baumforth Seedling A., Pyne's Royal, Mitchell's Seedling, Semper Fidelis A., Reader's Perfection, and Black Antwerp A.

Certain rather widespread varieties, which often prove unsatisfactory for various reasons, are best avoided. Some grow well, but crop poorly ; others produce only a few weak canes and gappy rows, whilst of others the fruit is small or unsatisfactory in quality.

A succession of varieties from early ripening to very late can be given. For special dessert fruit, suitable for marketing in punnets, three varieties, Pyne's Royal, Lloyd George, and North Ward, can be suggested ; lists can also be given of high flavoured varieties, and of those specially suitable for jam.

RASPBERRY DISEASES.

Three of the most serious of these diseases are :—

1.—*The Blue Stripe Wilt Disease.* The cause of this disease is a fungus (*Verticillium sp.*) which infests the root system and enters the fruiting and new canes, ultimately killing them, and in severe cases, the whole stool. This has been shown by inoculating seedling raspberry plants with the fungus isolated from naturally diseased canes. The inoculated plants developed the disease about thirty days after inoculation and died.

The symptoms of the disease are as follows :—

On the fruiting canes (spring and early summer), when the buds burst, many dead canes are seen. On some of these canes, black fungal resting bodies are found embedded in the bark in huge numbers. Each of these bodies, given suitable conditions, will germinate and produce the fungus which killed the cane.

Other canes show dead buds down one side, and such canes when cut usually show brown wood on that side.

Other canes develop weak fruiting laterals, which often wither before or after the fruit is set.

On the new canes (July till leaf-fall) a dark blue stripe appears at ground level and works up the cane.

This is accompanied or preceded by a striped withering and early detachment of leaves from the base upwards. The striped effect on the leaves is due to the fact that the veins remain green, whilst the tissue between them withers.

Certain control and preventive measures can be recommended:—

Avoid the most susceptible varieties.

When planting up, see plants before purchasing in August, and never take canes from stools showing the disease.

In established plantations, cut out and burn dead canes in the autumn and spring, and grub and burn severely affected stools.

2.—*Raspberry "Mosaic."* This trouble is distinguished by mottling of leaves on new as well as old canes. The cause is at present unknown, but it is advisable to avoid planting canes from severely affected stools.

3.—*A Cane Spot Disease.* This disease is distinguished by small purplish spots on the new canes during summer, which later become greyish sunken patches.

Badly infected canes are stunted and twisted, and the upper part often dies. Present observation suggests that it is severe on only a few varieties. It is advised to cut out or tip severely affected canes and burn same.

BLACK CURRANTS, VARIETIES, IDENTIFICATION, ECONOMIC VALUE, DISEASES AND CULTURAL TREATMENTS.

The importance of the varietal question is as great as amongst raspberries. Although considerably over 50 named sorts are at present in commerce, the majority of these are indistinguishable botanically and economically.

On the other hand, there are four quite distinct groups of black currants, the varietal characters of which are of vital economic importance.

These four groups, French, Boskoop, Baldwin and Goliath, can be readily distinguished by growers from bud, leaf, flower and fruit characters. Lists of varieties, which to all intents and purposes are alike, have now been drawn up, but growers are warned not to buy on name alone. The actual cropping and other qualities of these four groups and the particular suitabilities of each are widely different, and have been tested over a considerable period. Under conditions such as those existing at Malling, the special advantages of Baldwin as a " filler " are very striking.

Various causes of non-cropping have been elucidated. First of all, the " running off " of the fruit has been shown to be due to lack of fertilization,and shelter to encourage insect activities is advocated. The effect and symptoms of frost damage have been studied, and the importance of the time of flowering of different varieties shown.

So-called " reversion," the most common cause of crop failure, is also being dealt with. At present, in order to control the trouble, it is essential to detect it. The signs of " reversion " in flowers and leaves are unmistakable, and these have been described. There are, however, types of normal foliage resulting from very hard cutting or damage during the growing season which may mislead the grower into thinking he has the trouble, unless he learns to distinguish them. Leaves on spurs and young seedlings are also apt to mislead.

Four recommendations as to how to check " reversion " can be made, namely :—

(1) Grub and burn infected bushes, because the trouble can be transmitted from bush to bush. (2) " Rogue " stock bushes from which cuttings are to be taken. (3) Go through your cutting bed in summer and pull out all the suspects. (4) Apply measures for Mite control, because these have, in the field, also proved effective in controlling " reversion."

All these recommendations are supported by figures and data showing that " reversion " can be transmitted by grafting and " inarching," and also is closely associated with Mite infection.

The results show that a stock with 30% " reverts " has been " rogued " so that in three years it is completely free from " reversion."

Certain measures for the control of Big Bud have also been tested, and the very striking effectiveness of spraying with Winter strength Lime Sulphur (S.G. 1.025) just before blossom opens has been demonstrated.

Several new facts about " reversion " have recently been brought to light. These consistently emphasise the need for " plant hygiene." Where bushes have been only partially affected with " reversion " it has seldom been found effective to cut out the " reverted " portion. Similarly, it has been proved unsafe to take cuttings from apparently healthy parts of partially " reverted " bushes. It is thus evident that the trouble spreads further than is apparent.

Experiments in the manuring and pruning of black currants have been carried out at East Malling.

The conclusions from the manurial experiments are that, under

Malling conditions, nitrogenous manures (especially heavy dressings of dung and sulphate of ammonia) have given the best results, whilst artificial potassic and phosphatic manures have given negative or possibly even deleterious ones.

Since soil and manurial conditions of necessity differ, growers are urged to make experiments on their own soils in order not to waste manures. The number of bushes on which they ought to experiment to obtain a reliable result has now been worked out. At least 50 bushes for each treatment are recommended.

The results of hard and light pruning are rather striking and unexpected, but they have been confirmed in two series of experiments. The moral is, "Don't prune severely if you want quick returns."

THE HORTICULTURAL COLLEGE, SWANLEY, contributed a general educational exhibit, illustrating the work done by the lady students of the College, in its various departments. Examples of jams, jellies, marmalade, etc., were shown, besides various vegetables produced in the grounds of the Institution.

THE JOHN INNES HORTICULTURAL INSTITUTION, MERTON, SURREY, displayed an interesting collection of photographs, diagrams, and trees in pots, demonstrating self and cross-sterility in plums, cherries and apples.

LONG ASHTON RESEARCH STATION. The subject of the exhibit from this Institution was "The Manuring of Fruit Trees," and the exhibit was in illustration of various points which have been brought out in the pot experiments on the nutrition of fruit trees, which have been carried out at Long Ashton during the period 1921-1924.

In these experiments, apple trees, gooseberry and black currant bushes and raspberry plants, etc., have been grown in quartz sand and have been fed in such a way that the effects produced on the growth, flowering and fruiting, etc., of the plants from the starvation of any one of the elements nitrogen, potassium, phosphorus, calcium, magnesium and sulphur, could be studied.

Some typical results which have been obtained were shown by means of photographs, mounted leaves and specimens of gooseberry and black currant bushes which have been used in the experiments.

By means of photographs the following points were shown :—

1. Typical types of plants—apple trees, gooseberry and black currant bushes—resulting from the various treatments.

2. The effects of the various starvation treatments on blossom bud formation. It was noted that nitrogen starvation and phosphorus starvation greatly reduced the amount of blossom and delayed the time of blossoming.
3. The effect of the various starvation treatments on the root development of willow cuttings. The chief point of interest in this series of photographs was that where either potassium or calcium was omitted, the amount of secondary root fibre was greatly reduced.
4. The greater resistance offered to potassium starvation by an apple tree on a strong "free" stock as compared with one on a weaker Paradise stock.

In the three plates of mounted leaves exhibited various leaf types produced on apple trees, gooseberry and black currant bushes and raspberry plants, as the result of various starvation treatments, were shown. It was noted that each treatment produced leaves showing very definite symptoms ; thus, nitrogen starvation resulted in small yellowish-green leaves, potassium starvation produced leaf scorch, phosphorus starvation small bronzed leaves, calcium starvation large and slightly pale green leaves, and magnesium starvation various symptoms for the different plants, all indicating chlorophyll breakdown.

The pot specimens of gooseberries and black currants showed very clearly the types of shoot growth, the leaf characters and the characters of the buds resulting from the various treatments. The very great reduction in growth resulting from either nitrogen or phosphorus starvation was very apparent, whilst the development of leaf scorch resulting from potassium starvation and the break down of the leaf resulting from magnesium deficiency, were clearly evident.

NATURE STUDY AND HANDICRAFTS.

THE KENT EDUCATION COMMITTEE organised a comprehensive exhibit demonstrating the complete educational system in the County. It comprised sections devoted to Elementary, Secondary, Technical and Art Education.

ELEMENTARY EDUCATION. The section representing Elementary Education was divided into five bays illustrating respectively (1) a school clinic, (2) a school canteen, (3) a class room for Infants and Standard I. children, (4) the work of senior girls, and (5) the work of senior boys.

SCHOOL CLINIC. This exhibit illustrated the work done for the Elementary School child in a school clinic, particular attention being directed to the need for dental inspection and treatment.

SCHOOL CANTEEN. In the next bay a model canteen kitchen was shown, supplied with equipment in common use in school canteens, and a cook was at work each day preparing dinners on the same lines as those supplied at canteens in the county.

Specimen menus were exhibited and particulars given, of the fees charged to children, ranging from 1s. 3d. a week for one child to 4s. 2d. a week for 5 children in the same family.

As a contrast with the meals provided by the school canteen, some specimen dinners were shown such as are brought to school by children. These consisted of such things as bread and jam, cold suet pudding, bread and butter, hard boiled eggs, etc.

CLASSROOM FOR INFANTS AND STANDARD I. CHILDREN. This bay was fitted up so as to represent part of a classroom for infants and children up to the age of about 8 years. In order to secure as true a picture as possible, the whole of the exhibits were provided by one rural school in the county. The furniture consisted of tables and chairs such as are now being generally provided in the place of dual desks.

WORK OF SENIOR GIRLS AND OF SENIOR BOYS. These two bays illustrated the work of the senior girls and boys and the kind of equipment available in a good typical rural school.

Owing to the nature of the exhibition, emphasis was naturally given to the more practical work done in the schools.

In the senior girls' bay, specimens were shown of drawing, needlework, forms of handwork, infants' care, bottled fruits, jam and pickles, and also typical specimen dishes prepared in a domestic Subjects class. The exhibits in this bay included specimens of handwork done by mentally deficient and dull and backward children.

In the senior boys' bay were shown specimens of work in connection with school gardening, nature study, history and geography, handicraft, science and applied art.

SECONDARY EDUCATION. The section illustrating Secondary Education was divided into six bays illustrating respectively Art and Handicraft, Science, History and Geography, Woodwork, Metalwork, etc., the Folkestone Summer School and Goldsmiths' College.

The development of figure and descriptive drawing was shown from its crude beginnings in the lower school, to its later stages, revealing it as a medium for the expression of imaginative and creative thought.

Posters and programmes for school plays, sports and entertainments, headings for form-room notice boards, school curtains, dramatic costumes and other garments, showed how handicraft, figure and decorative composition and colour, can be linked with the interests and activities of school life.

A steady improvement in technique, resulting from careful grading of material and type of work, according to age : the systematic linking of æsthetic with practical considerations, resulting in the welding together of art and handicraft in the child's mind were demonstrated in the work shown.

A bay devoted to History, Science and Geography, contained a series of drawings, showing the development of ships, architecture, map-reading, botanical sketches and flower models, brass rubbings, special maps, including the course of the voyages of 16th century discovery, and geographical charts and models. Plants growing in chalk soil were contrasted with plants that avoid chalk, and there was a fine collection of bog plants.

The handicraft section contained samples of mechanical drawing and a large variety of work in wood and brass.

An exhibit of printing included a school-made press and apparatus complete with many excellent examples of finished work in type, a linoleum block and zinc plate.

The Folkestone Summer School exhibit was arranged to show the scheme for the training of teachers in art—drawing, colour, composition and design—and its application to craft work of all kinds.

In the needlework section good examples were shown in constructive and decorative needlework as appled to garments, cushion covers, etc.

The raffia and cane work was of a good standard and the colours used had been well chosen. Another interesting exhibit was a demonstration bee-hive made by a student and some microscopic slides and diagrams of natural history objects.

The exhibit from Goldsmiths' College was provided by the Art and Handicrafts classes, composed of men and women students preparing for the profession of teachers.

The examples from the art classes were intended to show colour work, drawing, lettering and design from different branches of the course rather than to represent the full scheme of work. The drawing course is divided into two parts, one giving opportunity for elementary work in various branches and by means of lectures directing attention to teaching methods, the other, an " advanced " course, giving greater opportunity for experiment in practical work and undertaking in greater detail the consideration of teaching methods and principles.

A group of examples from the handicraft classes illustrated the work done in textile arts, book-binding, leather craft and needlework. There were examples of weaving and rugmaking on simple home-made looms, sewn baskets, cane and rush-seated chairs and a child's swing. The leather work was represented by several leather bound books, lettered and tooled, together with various small wallets and bags, stained, polished and decorated with applied designs. The examples of needlework were such as might be undertaken by children and included sets of sewn and knitted garments for young children and cot covers and feeders to which decorative work had been applied.

A third group of articles was supplied by the classes in wood and metal work. In addition to examples of metal turning and screw cutting, a set of metal worker's measuring instruments combined vice and lathe work with a study of hardening and polishing. A simple model of a stationary steam engine illustrated the application of various workshop processes to the construction of a simple working model which would appeal to many boys.

TECHNICAL AND ART EDUCATION. The main purpose of the exhibit was to illustrate the opportunities afforded in these institutions for boys and girls to obtain a practical training which will fit them for entry into definite trades.

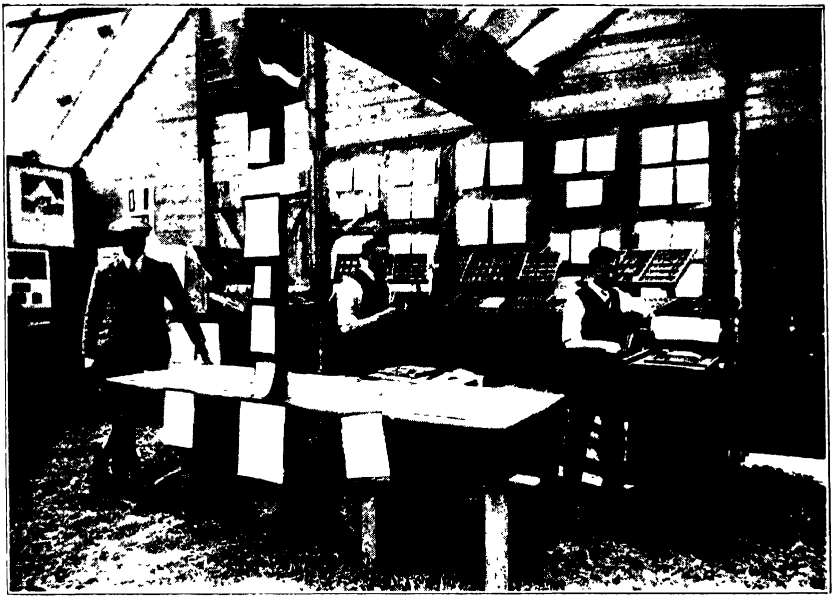
MECHANICAL ENGINEERING. In this section the aim was to illustrate the many factors concerned in the testing of materials used by the mechanical engineer.

The principal exhibit was an electrically-driven 30-ton testing machine. Specimens of steel up to 1/1-8th inch diameter were broken and the various properties very clearly shown. A number of photographs of the microstructure of metals were also exhibited.

A new type of extensometer was placed by the side of a standard Ewing Extensometer so that comparisons of the sensitiveness and accuracy of the two instruments might be made.

The commercial tests applied in the manufacture of cement were shown with the aid of a cement testing machine.

KENT AGRICULTURAL EDUCATION SUB-COMMITTEE EXHIBIT.

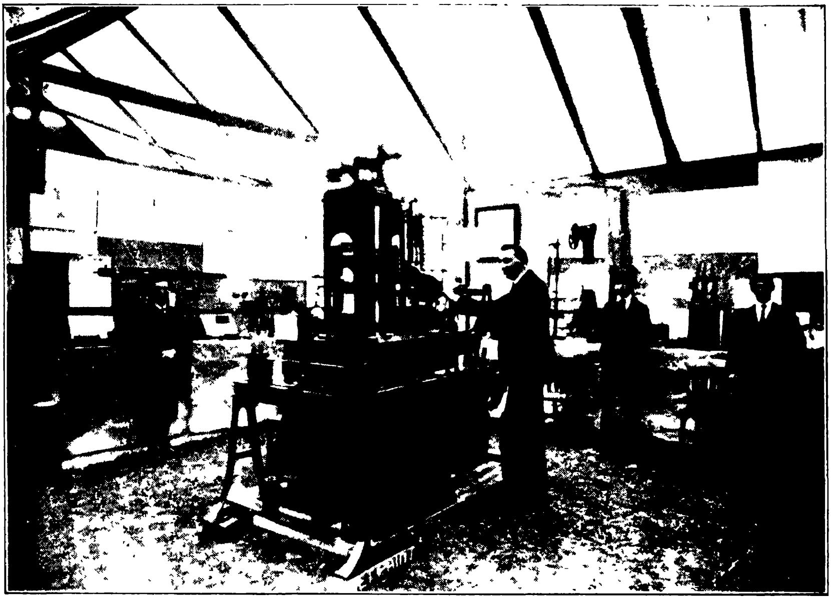


KENT EDUCATION COMMITTEE.
PRINTING.

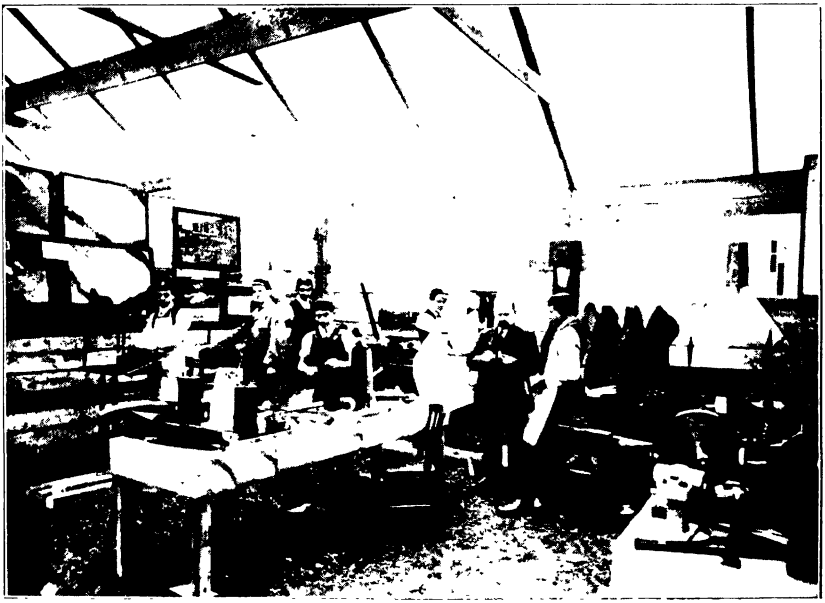
KENT EDUCATION COMMITTEE.
WOODWORK.

KENT EDUCATION COMMITTEE.
SCHOOL CANTEEN.

KENT EDUCATION COMMITTEE.
ILLUMINATING AND LEATHER WORK.



Kent Education Committee.
Mechanical Engineering.



Kent Education Committee.
Metal Work.

Another group of apparatus dealt with the testing of oils for flash point, viscosity, etc.

ELECTRICAL ENGINEERING. In this bay the equipment of an electrical engineering laboratory was exhibited. The larger examples of machinery included alternating and direct current generators and motors with the controlling switch-boards. In addition to these larger units, measuring instruments, induction coils, a four-valve wireless set, an electric arc, stroboscope, and general bench apparatus were displayed.

A number of experiments illustrating the fundamental principles and industrial applications were performed by boys from Junior Technical Schools..

WOODWORK, METALWORK AND MACHINE DRAWING. These exhibits illustrated one section of the work of pupils in the full time Junior Technical Schools in Kent, to which pupils are admitted at twelve years of age for a three year course, and given a general training which prepares them for entry into skilled trades, such as the various branches of the engineering and building trades.

Examples of woodwork were exhibited, which showed careful training in design, proportion, colour and construction. Stools, wireless cabinets, tables, bookcases, bookracks and cupboards were some of the more noticeable articles exhibited. Many were carved or inlaid and showed a high degree of finish.

The metalwork shown included scribe blocks, squares, etc., hinges, escutcheons, and beaten work in copper.

Every day during which the exhibition was open groups of boys from Junior Technical Schools in the county were to be seen working upon such articles as cabinets, stools, models of steam-boats or engaged in tinsmith's and fitter's work or metal turning.

BUILDING TRADES WORK. In the building section were shown models of roofs, staircases and windows, and examples of plumbing and gasfitting.

ARTS AND CRAFTS. This section illustrated very forcibly the change that has recently taken place in the teaching of Art. Fifteen or twenty years ago an exhibition of this kind would have consisted largely of examples of drawings and painting ; this class of work was hardly to be found, and in its place students were to be seen actually at work upon a number of different crafts. The section was divided into 12 bays, in each of which one of the following crafts was being practised, viz., Jewellery, Metalwork, Stencilling, Batik, Leatherwork, Gesso work, Embroidery, Painted decoration, Poster design, Hand-weaving and Illuminative writing. In a section by itself young printer apprentices were at work setting up type and printing notices for use at the Exhibition.

Examples of finished work were also shown, and the cases containing silver work and jewellery attracted considerable attention. Among the posters shown were those which have gained the three prizes offered by the Kent Education Committee for posters advertising the classes provided by the Committee for further education.

The County Library Van which circulates books to the various village centres was also shown and attracted considerable attention.

LORD EUSTACE PERCY, the President of the Board of Education, visited the Exhibition and sent the following message :—

" I have been very much impressed with the Kent Education Exhibition at the Agricultural Show, and I congratulate everyone concerned on the very fine work they have done in getting the exhibits together."

THE SURREY EDUCATIONAL COMMITTEE contributed Nature Study and School Garden exhibits, comprising models, drawings, etc.

THE WEST KENT FEDERATION OF WOMEN'S INSTITUTES exhibited various examples of handicrafts executed at their centres.

In a separate shed the KENT RURAL COMMUNITY COUNCIL displayed an interesting collection of specimens of wrought iron produced by smiths in Kent. They were intended to show the varied character of the work, which the local smith can produce; and to encourage the public to use the local smith more generally for making and repairing wrought iron articles.

The writer desires to offer his best thanks to the officials of the various educational bodies and institutions for all their kind co-operation in organising the Exhibition and for the information given for the compilation of this report.

XII.—THE EXHIBITION OF CIDER AT MAIDSTONE

By E. W. Farwell, Steward.

The entries at the Maidstone Exhibition in 1925 numbered 41 as compared with 50 at Taunton in 1924 and 56 at Swansea in 1923.

The classes, as usual, were open to growers or makers, and were on the same lines as at the previous Show, with the addition of a class for very dry cider, for which the first prize was offered by Lord Bledisloe.

The entries in the several classes were as follows :—

	Entries.
CIDER MADE IN 1924.	
Class 227—Cask of cider by an exhibitor who has not previously taken a first prize in any public exhibition	5
Class 228—Cask of cider, specific gravity not exceeding 1.015 at 60° Fahr.	6
Class 229—12 bottles of cider, ditto	6
Class 230—Cask of cider	6
Class 231—12 bottles of cider	8
CIDER MADE IN ANY YEAR.	
Class 232—12 bottles of cider, specific gravity not exceeding 1.005 at 60° Fahr.	5
CIDER MADE PREVIOUS TO 1924.	
Class 233—12 bottles of cider	5
	41

Samples from each exhibit were submitted to Dr. J. A. Voelcker, M.A., F.I.C., for analysis, and particulars of the results are set out in the accompanying table, together with the specific gravity of the Juice as supplied by the exhibitors. No entries were absent and none were disqualified.

Mr. G. H. Hollingworth was the Judge appointed, by the Society, and he carried out his duties on the first day of the Show.

The novice class continues to be well supported and the first prize was awarded for a good light cider made of Kingston Black.

The winning entries in the cask class for dry cider were very even in quality, being very clean, dry ciders. The first cider was made of Masters, White Jerseys and Horners, with a few Cap of Liberty apples.

In the class for dry bottled cider the first three were easily found, the winning cider being made of Royal and White Jersey, Silver Cup and Kingston Black.

The first three ciders in the open class for cask cider were very even and might have been placed in any order, besides being as good as any in the Show. The first cider in this class and in the open bottle class was made of Red and White Jersey, Davis' Favourite, and a few Cap of Liberty apples.

The quality of the open bottle class was good, but several of the entries contained a cloudy deposit which upset the Judge's decision on taste. Had his decision depended on taste alone, the result might have been different.

Although the class for very dry cider was well supported, it must be admitted that the quality was disappointing, and none of the cider in this class could be regarded as a marketable article. All the same, it was hardly to be expected that the entries would be good the first year, and it is to be hoped that with the knowledge already gained and with further experience, makers may be able to produce a palatable and really dry cider.

The following are the Judge's comments on the exhibits :—

Considering that the Show was held a long distance from the chief cider making Counties, the competition may be considered satisfactory and, with a few exceptions, the quality of the cider shown was good. It was particularly gratifying to find that the competition was not confined to West of England cider makers, and the fact of Kentish cider being represented provided further evidence of the growing popularity of cider as a beverage.

With reference to cider in cask, the class open to exhibitors who had not previously won a first prize in any public exhibition, attracted five competitors, which, in view of all the circumstances, may be considered satisfactory. The general standard of quality in this class compared favourably with that of the cider shown by exhibitors with longer experience, which fact goes to show that there is a lot of cider made which is worthy of being entered in competition. In the two open classes for "sweet" and "dry" cider there were six entries in each, and there was nothing to call for any special comment, the standard of quality being very even throughout the classes. The best of the bottled cider classes was that for 12 bottles of cider made in 1924. Eight lots were staged, and there was little to choose between the prize winning exhibits, the standard of quality being high. As compared with the sweet cider, the dry cider in bottle was rather disappointing in point of flavour, and this particularly applies to the class for 12 bottles of cider made in any year and having a specific gravity not exceeding 1.005 at 60° Fahr. It does not appear, in fact, as if this class has filled the purpose for which it was introduced.

It was obvious that in the case of some of the exhibits the cider was made from apples other than the well-known vintage varieties, and in these cases richness in colour and full cider flavour were lacking.

The good quality of the cider, however, made in the wet and sunless season of 1924 was contradictive to the theory that such seasons are unfavourable for making good cider.

RESULTS OF ANALYSES.

Class.	*No.*	*Spec. Grav.*	*Solids.*	*Percentage of Alcohol.*	*Acid.*	*Spec. Grav. of Juice as given by Exhibitor.*
227	1.	1.013	4.45	3.88	.33	
	2.	1.019	5.75	3.17	.57	
	3.	1.027	7.70	2.82	.63	1.056
	4.	1.011	4.90	6.03	.57	1.056
	5.	1.017	5.95	4.76	.47	1.058
228	6.	1.014	5.10	4.83	.47	1.052
	7.	1.014	4.97	4.61	.53	1.054
	8.	1.015	5.17	3.88	.53	1.055
	9.	1.015	5.00	3.88	.57	1.054
	10.	1.010	4.35	5.20	.47	
	11.	1.011	4.90	6.03	.57	1.058
229	12.	1.014	5.38	5.25	.47	1.052
	13.	1.014	4.98	4.61	.53	1.054
	14.	1.012	4.45	3.96	.40	1.055
	15.	1.015	5.22	3.95	.63	1.054
	16.	1.011	4.42	5.05	.47	
	17.	1.011	4.90	6.10	.57	1.057
230	18.	1.027	7.68	3.03	.40	1.051
	19.	1.029	8.20	2.47	.37	1.052
	20.	1.027	7.80	2.96	.50	1.057
	21.	1.019	5.85	3.45	.53	1.056
	22.	1.025	7.30	3.31	.30	
	23.	1.016	5.85	5.56.	.73	1.059
231	24.	1.028	7.85	2.82	.37	1.051
	25.	1.030	8.50	2.50	.33	1.051
	26.	1.030	8.35	2.64	.53	1.057
	27.	1.021	6.60	3.67	.50	1.056
	28.	1.026	7.50	3.10	.37	
	29.	1.017	6.04	5.13	.83	1.059
232	30.	1.019	6.20	4.54	.50	1.058
	31.	1.029	7.80	1.20	.33	
	32.	1.004	2.85	5.73	.40	1.050
	33.	1.005	3.30	5.05	.30	1.050
	34.	1.005	2.95	4.83	.40	1.052
	35.	1.002	2.40	5.88	.50	
	36.	1.004	3.90	8.64	.57	1.070
233	37.	1.026	7.65	2.48	.30	1.055
	38.	1.023	6.85	3.14	.53	1.058
	39.	1.012	5.50	7.18	.43	1.070
	40.	1.030	8.50	2.34	.53	
	41.	1.029	7.50	.91	.33	

ALLOTMENTS COMPETITION.

This competition, organized by the help of the Maidstone Allotment Holders and Cottage Gardeners' Association, was entirely successful in stimulating a high level of cultivation among Maidstone allotment holders, and in demonstrating the importance of judging allotments by the cultural methods employed, rather than by the exhibition of produce which may not be representative of the general standard of cultivation over the whole plot. Mr. R. Bruce Ward, who represented the Society at the distribution of prizes on the 5th September, reported that there was no doubt that the competition had increased the keenness of the cultivators and that the produce of the allotments reached a high level. The competition was arranged, as in previous years, by districts, each of which competed first for district prizes, the winners afterwards being judged for the championship. His Worship the Mayor gave away the prizes, details of which will be found on page xciv of the appendix.

The following is the report of the judge, Mr. Herbert H. Morris :—

An analysis of the judging sheets in connection with the above would reveal several facts which would show the true value of the system of allotment judging and prize awarding.

With regard to the general survey of the conditions prevailing in the plots, to my mind, there is but one verdict, the greatest of credit being due to practically everyone who entered the contest, and this also applies to a very great number of other allotment holders.

There was very considerable attention given to intensive culture or inter-cropping, the general requirement of the various vegetables grown, space between rows, and plants being very generally well understood. Self-contained plots were very noticeable, with water barrels, seed beds (brassicas), manure heaps, etc. Cleanliness of paths and plots was simply beautiful, showing that a great deal of labour had been given. The number of varieties of vegetables grown was up to a very high standard. potatoes always being well to the fore as the main crop for the allotment holder. As viewed by the professional gardener the true test as to the ability of the allotment holder's skill in gardening, the judging of the growing crops is far more desirable than the judging of prepared samples of vegetables on the exhibition tables.

However, the indoor exhibition was of very fine quality, and in many cases confirmed the opinions as passed during the plot judging.

XIV. ANNUAL REPORT UPON THE SOCIETY'S GENERAL OPERATIONS.

By F. H. Storr.

The Annual Meeting of Members was held on Saturday, May 30th, in the Council Pavilion in the Show Ground, Maidstone. The President, Colonel F. S. W. Cornwallis, C.B.E., D.L., was in the chair, and among the members present were:—The Marquis of Bath, K.G., Lord Wynford, D.S.O., and Mr. H. B. Napier (Vice-Presidents), the Right Hon. Sir R. A. Sanders, M.P., the Rev. A. T. Boscawen, Colonel E. Lewis, Captain W. Best, Captain H. H. Popert, Messrs. A. Allsebrook, R. Bruford, J. E. Daw, H. J. Kingwell, G. Lipscomb, W. H. Neal, Professor Penberthy, W. C. Rowcliffe and R. Bruce Ward.

The Minutes of the last Annual General Meeting having been confirmed, it was unanimously resolved on the motion of Lord Wynford, seconded by Mr. G. Lipscomb, that the Earl of Clarendon be elected President of the Society for the ensuing year.

On the motion of the Marquis of Bath, seconded by Mr. H. J. Kingwell, it was resolved that Colonel F. S. W. Cornwallis be elected a Vice-President of the Society. Colonel E. Lewis proposed, and Captain Popert seconded the motion that the gentlemen named on page cxii of the Appendix be elected members of Council for the years 1925-27. Colonel Cornwallis proposed that the Annual Report as amended be approved and printed in the Society's Journal. Sir Robert Sanders seconded the motion, saying that they had fulfilled the double purpose of promoting knowledge and evading income tax. The motion was adopted, and the Report is here printed.

The Council congratulate the members upon meeting in Kent for the first time since the war, after a period of 15 years, and on holding their meeting in conjunction with the Kent County Agricultural Society. It is forty-one years since the Society have visited Maidstone, and though there are not more than five vice-presidents of the Society or members of Council who were then holding office, they will agree that Maidstone has welcomed the Society with true Kentish cordiality. The visits paid in 1890 and 1910 to Rochester have kept up the cordial relations which have always existed between the Society and the County since 1881.

After a series of years during which the Show has been held, generally under considerable difficulties owing to national causes in the shape of infectious disease or labour trouble, the Maidstone meeting is fortunately taking place under normal conditions, except for the continued widespread depression in the country's industry.

The entries of stock and of implements show a considerable increase over those of any previous visit to Kent, but the excellent ground provided by the local Committee has proved sufficient to accommodate them to the best advantage. Your Council have continued the policy consistently pursued of making the Show a real opportunity of instruction to all connected with agriculture. Demonstrations of working processes on the best lines have been provided wherever possible, and every encouragement has been given to displays of educational value. In this connection the thanks of the Society are due to the Kent Education Committee and to the Agricultural Organiser for Kent, for their energetic co-operation, and to the Research stations in the County, where so much valuable work is being done to help the farmer. It is believed that the exhibits from these Stations are of great value in bringing home to the agriculturist the practical nature of the results obtained by scientific research.

The thanks of the Society are also especially due to the Maidstone Local Committee, and their honorary secretary, his Worship the Mayor. The Society has before now enjoyed the services of a mayor in the capacity of its own secretary, but this is the first occasion on which the local committee have been able to secure such valuable assistance. Mention has been made above of the amalgamation for the year with the Kent County Agricultural Society, who have cordially helped in every way possible.

Your Council are continuing the demonstrations of bracken eradication for another year. In this connection it is hoped that complete information on the best time at which to cut bracken will soon be available from the experiments which are being financed by the Society, and are under the management of Professor Darbishire, of Bristol University. The extension of the experiments, to cover the question of the manuring of acid pastures, has been continued. Attention is being directed especially to determining whether the application of lime is necessary when phosphatic manures have already been applied. The indications at present are that the growth of wild white clover is sufficiently encouraged without the application of lime in addition to basic slag. The Experiments and Education Committee are further considering whether experiments or demonstrations can be usefully undertaken on the use of portable lime and chalk crushers on the farm. This will form the basis of a report to Council at a future date.

The question of the liability of Agricultural Societies to the payment of income tax, which was only settled by the Finance Act of 1924 in so far as Show profits were concerned, is still being considered by H.M. Special Commissioners. Your Council are co-operating with the Royal Lancashire and Yorkshire Societies in attempting to secure a favourable decision, which would be of great value to every agricultural society in the country with the exception of the Royal Agricultural Society, which is exempt by virtue of its charter.

The other principal matter of general importance which has engaged the attention of Council has been the epidemic of foot-and-mouth disease, now happily almost suppressed. Motions were proposed for heavier penalties on breeders not conforming to regulations, but it was considered that the powers already possessed by the Ministry of Agriculture should be sufficient to deal with the epidemic.

The Council are able to report the acceptance of an invitation from Watford to hold the 1926 meeting in that town. A satisfactory site has been found, through the kindness of the Earl of Clarendon, and members will be glad to learn that his lordship has consented to be nominated as President of the Society for 1925-26. The Hertfordshire Agricultural Society has asked to become affiliated to the Bath and West Society for that year, and the Watford Horse Show will not be held, emphasising the cordiality with which the Society has been welcomed.

Since the last Annual General Meeting Council has been able to invest £2,500 in New South Wales 5 per cent. Stock from the balances carried over from the Swansea Show, upon which the expenses of the Taunton Show made no inroads, owing to the satisfactory attendances. The value of the Society's investments again shows a slight appreciation, apart from this addition. Council desire to call attention to the great value of a large membership. The list of members, though almost as large as in the previous year, has not shown the expected expansion, and it is hoped that every member will do his best to add to the list, so that the many activities of the Society may receive the support and publicity due to them.

The year has brought heavy losses to the Society among members of Council. The late Duke of Beaufort was a Vice-President of the Society and President in 1903. Mr. G. E. Lloyd Baker, a Vice-President, was for years a valued member of Council and of the

Experiments and Journal Committees. The Society's stewards will particularly feel the loss of Mr. T. E. Studdy, whose kindly and cheery presence was for so long welcomed at the Annual Meetings by all with whom he came in contact. The loss of Brigadier-General Sir H. W. Drummond, Bart., has also to be deplored, and Mr. H. M. G. Evans has been forced by bad health to resign from the Council. Members will be glad to welcome back Mr. C. R. Knollys, who is once again living in the area covered by the Society's activities. Other extraordinary vacancies on the Council have been filled by the appointment of Mr. F. B. Imbert Terry, Mr. A. T. Powlett, Mr. E. C. Cave and Mr. H. J. Kingwell.

The Council recommend that the gentlemen named on the agenda paper be elected as members of Council for the years 1925-27.

During the year under review your Council has continued its grant to the Bristol University Agricultural Research Station, and has made grants to the Devon County Society and to the National Institute for Research in Dairying, a department of scientific work with which the Society has been particularly concerned for many years. Though the charter granted to the Institute does not provide a place for a representative of the Society on its governing body, it is hoped that the Council of the Institute will co-opt one, and so continue the Society's connection with this branch of research work.

Your Council desire to express to Colonel F. S. W. Cornwallis its sincere thanks for his services as President of the Society during the past year, and for his great contribution towards the success of the present meeting. They recommend that he be elected a Vice-President of the Society.

Mr. H. B. Napier, in moving a vote of thanks to the Mayor of Maidstone and the local Committee, laid emphasis on the great difference it made to the officers of the Society when they were received with such hospitality as had been shown them in Kent. Captain W. Best, in seconding, drew attention to the high standard of efficiency among the workmen in the yard. He also moved that the thanks of the Society be expressed to the Southern Railway Company for the excellent arrangements made for the reception of stock exhibits, which he hoped would be equalled by those for their removal. Mr. R. Bruford proposed, and Professor J. Penberthy seconded a vote of thanks to the Judges. The Rev. A. T. Boscawen moved and Mr. J. E. Daw seconded a vote of thanks to the retiring President for his valuable services during the past year, and for the able way in which he had presided over Council meetings, which had conduced to a commendable brevity and efficiency in their management.

XV.—THE NATIONAL FRUIT AND CIDER INSTITUTE.

By B. T. P. Barker, M.A., Director.

In comparison with most recent years the year 1925 produced no considerable changes in staff at the Institute. As a result it has been possible to concentrate on the investigations in hand and to maintain continuity under more favourable conditions than usual. Substantial progress has been made in most of the main lines of research. In addition to what is included in the present Report, there is much matter now either in preparation for publication or being held back for confirmation by a further season's results.

While progress at Long Ashton has been steady and generally satisfactory, the natural development of the work during the year has brought to a head serious problems for the immediate future which are a source of anxiety and cannot be shelved without detriment to the efficiency of the Station. For example, the expansion of the Staff on the scientific side since the war has resulted in overcrowding in the laboratory building to such an extent that certain lines of work urgently requiring attention and demanding adequate laboratory space cannot be proceeded with under present conditions, while accommodation for research students and voluntary workers is not available. The growth of the scientific staff has also been responsible for so rapid an increase in the number of field experiments in progress at the Station that the whole of the part of Fenswood Farm which had been taken over for this purpose is now appropriated to specific objects.

The provision of laboratory extension and additional land, the two most pressing needs, is referred to further in the sections on Land and Buildings. Other needs are of less immediate urgency, but are definitely in sight. A financial problem of some magnitude thus faces the Station. Any material increase in the maintenance grant received from the Ministry of Agriculture is improbable in the near future and cannot be expected till the financial position of the country has improved. The Station must therefore look to new support from other sources to meet the normal increase in expenditure required to carry through the programme of work already in hand, leaving aside altogether any question of further expansion. Indeed, for the next few years at least it would appear that the policy of the Station should be to stabilise the present position and justify it.

While the position at Long Ashton is as just outlined, there has been rapid development in the two other associated sections of the work of this Department of Bristol University, viz., the agricultural advisory work under the charge of Dr. Hanley, now being conducted from the new centre at Berkeley Square, Bristol, and the work on fruit and vegetable preservation carried on through the Campden Research Station. Although some reference to the activities of these two centres is necessary on account of their intimate connection with the Long Ashton Institute, it is proposed to confine the present Report primarily to the work of the latter Station.

The personnel of the research and advisory staff located at Long Ashton has remained unchanged throughout the year.

Changes in the assistant staff have been caused by the resignation of Mr. E. H. M. Barker, pomological assistant, and the transfer of Mr. A. W. Ling, assistant chemist, to the Berkeley Square Advisory Centre on his appointment as Advisory Agricultural Chemist. The latter has been succeeded by Mr. H. R. Osmond, B.Sc., A.I.C., from the Chemical Department of Bristol University. Mr. Barker's post has not yet been filled, the work in the meantime having been carried on by Mr. P. T. Pickford, a student-assistant, and Mr. E. Umpleby, who, as assistant recorder, is in charge of the nursery work of the Station.

Mr. T. W. Swarbrick, B.Sc., a research scholar of the Ministry of Agriculture from Leeds University, has been stationed at Long Ashton to carry out an investigation on the healing of wounds of woody tissues, which is closely concerned with many points of importance in pomological practice.

A grant has been obtained from the Development Fund for a special investigation on certain physical and chemical problems of tar-distillate spray fluids. The work has been placed in the hands of Mr. L. Smith, B.Sc., a research student of Bristol University working under Professor McBain's direction in the Department of Chemistry.

The rearrangement involved by the development of the Advisory Scheme under Dr. Hanley and the opening of the new laboratories and offices for the agricultural side of the work at Berkeley Square, Bristol, are further referred to in the section on Advisory Work.

At the Campden Research Station, where the Department is at present conducting most of its work on the problems of fruit and vegetable preservation, Miss M. J. M. Watson, who has for some years been in charge of the Home Kitchen section, has resigned her post on receiving an appointment as Instructress in Domestic Science under the Board of Education for Scotland. A successor will be appointed early in 1926. Dr. Paton, who has for some time been engaged in research in the Brewing Department of Birmingham University,has been selected to fill the new post of Assistant Chemist.

Land and Plantations.—The problem of providing land for the extension of the experimental work on fruit culture in the field has already been mentioned. When Fenswood Farm was purchased in 1920 it was hoped that the land thus secured would serve as a reserve upon which to draw for extension for many years to come. It was recognised at the time that certain portions were unsuited for fruit culture and that parts of the remainder, while capable of growing fruit, were not sufficiently good for any type of field trial. . The knowledge which has been gained during the course of the Fruit Soils Survey and of further experience and a closer examination of the soil conditions over all parts of the farm has shown that a substantial part of the land which had been originally regarded as possible for experimental work on fruit culture is below the necessary standard of evenness. Expansion of field experiments has proceeded so rapidly that by the spring of 1925 the whole of the suitable land, except some thirty acres adjacent to the farmhouse and buildings, had been absorbed. Since this is required in the immediate future for the programme of rootstock trials and other investigations already in hand, it has been found necessary to terminate Mr. Prideaux's tenancy of the farm. In consequence the Station has now taken in charge the whole of the farm and will itself conduct the farming operations pending a decision as to the course to be taken with regard to the portions unsuitable for experimental work. With the termination of the association of Mr. Prideaux with the Institute, acknowledgment should be made of the help he has willingly rendered in many ways and the readiness with which he has invariably accepted modifications in his holding which have been called for by the extension of the work of the Institute.

While the immediate calls for land have thus been met, the fact cannot be ignored that various investigations on which work has already proceeded some distance are maturing and will demand field tests at no distant date. These needs can only be met either by scrapping existing plots which have already yielded sufficient results or by obtaining suitable land outside the farm. The former alternative in course of time might serve—to a very limited extent it is being adopted already—but for the near future it is open to the serious objections that in many cases conclusions would be based on results not extending over the normal life of a plantation, and that the trees would be sacrificed as they were approaching their most profitable stage. The second alternative is now being explored, but the prospects of obtaining any considerable area of suitable land near the Institute are not bright.

New plots established during the year on land which had been previously in preparation for fruit include a trial plantation of bush apples on selected free stocks, various strawberry plots concerned with aspects of the extensive programme of strawberry investigations referred to later, a raspberry variety trial plot, extensions of seedling trial plantations, a black currant plot for further work on reversion disease, and a plantation of bush apples for investigations on the nature of the reciprocal influence of scion and rootstock.

The willow plantations have been extended to accommodate new additions to the willow variety collection.

Buildings. From the start of the Institute the lack of attached cottages for housing skilled labour has been a severe handicap owing to the necessity of importing trained men into Long Ashton and the scarcity of available cottage accommodation in the neighbourhood. The decision of the Committee to erect a house for the Plantations Officer and four cottages for other members of the plantations staff should, therefore, ensure a degree of efficiency in the plantation work which it has not been hitherto possible to reach. These houses are now nearing completion, and should be in readiness for occupation early in 1926.

The taking over of Fenswood Farm has placed at the disposal of the Institute a series of farm buildings which are proving of great service. More storage and other accommodation is constantly being required as the work in the fruit plantations and cider house expands, and additional expenditure on that account is being avoided by utilising some of these buildings now available.

It has already been mentioned that a serious need for more laboratory accommodation has arisen. This need may be intensified if certain changes relating to other sections of the work of the Department now under contemplation are approved. Plans for an addition to the existing building have been prepared and estimates obtained. The approximate cost is likely to be £5,000. This sum must be raised before the scheme can be proceeded with, since the Station has no funds of its own available for the purpose. While a grant-in-aid from the Development Fund may be secured, this will not exceed one-half of the total cost.

General. The Fruit Soils Survey as originally planned is now in its fourth and final year. The major part of the work involved has been completed and the report upon it is now in course of preparation. The results of the Survey fully justify both the great amount of time that has been given to it and the extension of the investigation to other soil types. It is, therefore, gratifying to be able to record that a further grant from the Ministry of Agriculture has been promised to enable the survey to be extended to cover both the important fruit area in West Cambridgeshire centred around Histon, Cottenham and Willingham, and the Lias Clay formation, which embraces some of the principal fruit districts in the Bristol Province. As before, members of the staff of the Horticultural Department of Cambridge University will be responsible for the Eastern Counties section of the Survey, while the Long Ashton staff will undertake the work in the West. The latter will, on this occasion, also include the agricultural aspect, and Dr. Hanley and other members of the Berkeley Square staff will, therefore, co-operate with the Long Ashton workers.

Educational exhibits were staged during the year at the following Shows:—

British Empire Exhibition, Wembley Park.
Devon County Show, Plymouth.
Somerset Agricultural Show, Weston-super-Mare.
Wiltshire Agricultural Show, Warminster.
Bath and West and Southern Counties Show, Maidstone.
Royal Horticultural Society's Show, Chelsea.
Three Counties Agricultural Show, Hereford.
Cheltenham Floral Fête, Cheltenham.
Monmouthshire Agricultural Show, Monmouth.
Usk Agricultural Show, Usk.
Imperial Fruit Show, London.

At the Imperial Fruit Show, which, on this occasion, was held in London at the Holland Park Skating Rink, the Institute in addition to its exhibit relating to the Long Ashton work organised and conducted on behalf of the National Association of Cider Makers a series of demonstrations of cider making, these being given daily throughout the Show. The staff at Campden also contributed an exhibit dealing with fruit and vegetable preservation, and gave demonstrations of methods of canning and bottling. It also contributed a section to the exhibit of the Ministry of Agriculture and Fisheries in the Government Pavilion at the British Empire Exhibition at Wembley, as in 1924.

In view of the economic importance and educational value of many of the results which are coming to hand in different investigations at Long Ashton and cannot be seen at the time of year when the usual Field Days are held, it was decided to throw the Station open in a similar way at more frequent intervals during 1925, thus giving visitors an opportunity of seeing experiments and results which would otherwise be missed by them. Accordingly, in addition to the Annual Tasting Day held on May 7th, and the Plantations Field Day, held on September 15th, both of which were attended even more numerously than usual, a series of Open Days was arranged, the programme of demonstrations being limited to special subjects seasonable for the time of year. The attendances on these occasions ranged from about thirty to over a hundred, numbers which must be considered as very satisfactory since, from the nature of the case, many visitors from a distance could not be expected on any single occasion. The degree of interest shown was encouraging and would certainly justify, from the educational point of view alone, a corresponding arrangement as a regular feature in future years. On the other hand, it must be borne in mind that these occasions involve considerable preparation and time and are a distraction to the research worker at his busiest period. Hence some departure from the original method will probably be found necessary. The thanks of the Station are due to the Press for giving notice of the dates of these Open Days and accounts of the programme of the individual occasions. These were as follows :- –

March 25th,	1925	I.	Nutrition of Fruit Trees.
		II.	Die-Back Diseases in Fruit Trees.
		III.	Tar Distillate Washes (Carbo Fluids). Their use as Egg-killing Washes.
		IV.	Scab Diseases of Apples and Pears.
		V.	Winter Pruning of Apple Trees.
April 29th,	,,	I.	Breeding New Varieties of Fruits.
		II.	Self Sterility of Fruit Trees.
		III.	American Gooseberry Mildew.
		IV.	Control of Plum Aphis by Winter Washes.
		V.	The Control of Big Bud Mite on Black Currants with Lime Sulphur.
June 17th	,,	I.	Reversion Disease of Black Currants.
		II.	" Big Bud " ,, ,, ,, ,,
July 22nd,	,,	I.	The Bottling of Fruit, with particular reference to the Soft Fruits.
		II.	Fruit Canning, using a Hand Can Sealer.
		III.	Raspberry Varieties.
November 25th,	,,	I.	Cider Making.

The scheme for the provision of local instruction in cider-making referred to in last year's Report has proceeded a further stage. The County Councils of Dorset, Monmouth and Worcester have decided to co-operate in a scheme under which a full-time Instructor will be located at the Institute and available for service in those counties. The Ministry of Agriculture is also contributing a grant-in-aid. Pending the completion of the period of special training of the Instructor, Mr. Grove has, as in 1924, given local demonstrations and paid a number of advisory visits. In Gloucestershire the

County Council is providing instruction and local advice by an Instructor trained at Long Ashton prior to the war. The Somerset County Council has approved the appointment of a full-time Instructor, and has nominated the selected candidate for a special course of training at the Institute. In Devon the local authority contemplates making provision for instruction by one of the members of its staff. Thus there will now be available over by far the greater part of the cider-producing area in the West of England facilities for obtaining local advice and instruction in this subject.

During the course of the negotiations for the provision of local instruction in cider-making it became evident that there was a real need for a centre for technical training of a more advanced character, suited for those intending to prepare for commercial cider-making or to qualify as instructors in the subject. Hitherto the Institute has given training in isolated cases, but has done little in the direction of organised courses. A scheme for a special course to be given at Long Ashton is now under consideration, particulars of which will be circulated to prospective students on application.

The development of the scheme for local instruction in cider-making necessarily involves a renewal of effort to improve the condition of farm orcharding. In this connection the various trial and demonstration orchards established in contributing counties with trees supplied by the Institute have mostly reached a stage at which they can serve as valuable object lessons. The establishment of similar orchards at suitable new centres is being proceeded with and a number of trees were sent out for the purpose from the Institute nursery during the past planting season.

In an altogether different direction the Institute has been able during the year to render service to the cider industry. The introduction by the Ministry of Health of new regulations relating to the use of preservatives in foods and drinks has raised a number of questions of serious importance to the industry, more particularly in relation to the practice of sulphuring. This custom has always been regarded as legitimate in the fermentation industries, and has been sanctioned by time-honoured usage. In its negotiations with the Ministry the National Association of Cider Makers has had placed at its disposal the services of the technical staff of the Institute, both at the official discussions and by means of the considerable amount of laboratory investigations which have been involved in connection therewith. As a result the proposed regulations in their present form, due to come into operation in 1927, while adequately safeguarding public health, will effect this object in a manner much more satisfactory to the industry than the original proposals. The Association has expressed its warm appreciation of the help given by the Institute in the matter. Since the subject was first raised the Institute has carried out many experiments relating to the practice of sulphuring and the limits of its utility. The results will be published for the guidance of makers as soon as they are complete and it is expected that it will be possible for them to have this information in their hands before the regulations come into force: but it has been considered advisable to defer publication in the Annual Report until a record of the complete investigation can be given. Several useful facts have already been obtained and it is suggested that makers requiring early information on the practice of sulphuring in relation to the new regulations should communicate with the Director or Mr. Grove.

During the year there has been a considerable development of co-operative work with other centres, of which mention may be made here of the following.

The first joint meeting of the full staffs of the East Malling Fruit Research Station and the Long Ashton Station was held at the latter place in October. The relations and joint working arrangements of the two Stations were discussed and plans for co-operation and co-ordination of work approved. The respective programmes of research were considered item by item and, where desirable, collaboration arranged. Subsequently a series of group meetings between the various members of the staffs concerned with joint work took place, at which the details of the latter were settled. It is intended to hold these meetings annually in future. They should be the means of ensuring the closest touch between the two Stations in their work, the corresponding avoidance of unnecessary overlapping and utilisation of opportunities for desirable duplication of experiments, and the promotion of cordial working relations.

In a somewhat similar way working arrangements have been established between the advisory and research staffs of the Department and the agricultural and horticultural staffs of the five counties comprising the Bristol Province. Since the war regular joint meetings have been held three or four times annually and a system of collaboration in the advisory and experimental work within the Province organised. In 1924 an extension of the arrangement was made to include the three counties of the Harper-Adams Province, Shropshire, Staffordshire and Warwickshire, and its advisory and collegiate centre at Harper-Adams College, the meetings in this case being annual. The first took place at Long Ashton in September, 1924, and the second at Harper-Adams College in July, 1925.

The conjoint work between the Institute staff and that of the associated counties has extended beyond that of a purely advisory or field trial character. For example, at the Worcestershire Horticultural Station at Perdiswell, manurial trials on strawberries on similar lines to those in progress at Long Ashton and the Botley Experimental Fruit Station in Hampshire have been started. At the same centre some of the more promising black-currant seedlings raised at Long Ashton and the selected forms of seedling apple stocks are also under trial. Trees on the latter are also being raised in the nursery of the Institute for trials to be carried out at the Somerset Farm Institute at Cannington.

Under the Fruit Variety Trials scheme, for which Wisley serves as the main Station, it has been arranged that a Sub-Station should be established at the Institute. The first batch of material for trial has already been received and is being planted out during the current planting season.

The Institute continues its close association with the experimental work on strawberries at the Botley Experimental Fruit Station. Interesting comparative results are being obtained from the duplicate trials at the two Stations, to which reference was made in the last Annual Report.

The serious situation existing throughout the strawberry growing districts on account of the poor condition of a large percentage of the plants has caused the plant pathologists in the districts concerned to give considerable attention to this trouble. With the object of giving all workers an opportunity of comparing notes and organising a settled plan of campaign, a Conference was held at the Institute during the last strawberry fruit season. A scheme of work for the coming year has been arranged, and a Special Investigation grant from the Ministry of Agriculture has been promised, if the services of a suitable full-time research worker can be secured.

In continuation of work on the cold storage of fruits, which the Institute has carried on each year since the war on behalf of the Food Investigation Board, trials have been carried out on the keeping qualities of apples from selected plantations presenting features of special interest in connection with the Fruit Soils Survey, and these will be repeated over a series of years to eliminate complications introduced by seasonal variation. The trials with soft fruits and plums are being continued as usual.

During the year Mr. Wallace has continued to serve on the Experiments Committee of the Bath and West Society, for which body work on "The Manuring of Acid Pastures" and "The Eradication of Bracken from Moorland Pastures" is in progress.

Since Mr. Wallace's duties at the Research Station now relate entirely to Horticultural matters, it has been arranged that in future Dr. Hanley should undertake a considerable proportion of the field work carried out for the Society, and accordingly he was recently elected a member of the Experiments Committee. This arrangement should effect considerable economy in the time required for the work. Since the election of Dr. Hanley to the Committee, an investigation to explore the possibility of utilising economically local sources of limestone for agricultural purposes by the use of portable crushing machines and improvised kilns has been commenced. Dr. Hanley and Mr. Wallace are collaborating in the work.

Before passing on to the accounts of the advisory work and the various investigations to which reference is made in this Report, acknowledgment should be made of the services which have been rendered by the members of the administrative and assistant staffs. The part played by them in the work of the Institute cannot be adequately indicated in a Report of this character, and only those familiar with the inner working of the Station can fully recognise the importance of their share of its work and the generous measure of their contribution to its efforts.

ADVISORY WORK.

During the year the scheme devised in 1924 for the future conduct of advisory work in the Department was in full operation.

Under this scheme all problems relating to Agriculture are dealt with in the new laboratories and offices at 22, Berkeley Square, Bristol, whilst Horticultural problems receive attention at Long Ashton Research Station and those relating to the subjects of the preservation of fruit and vegetables at the Chipping Campden Research Station.

The Advisory Officers are located as follows :—

BERKELEY SQUARE :	Chief Advisory Officer.
	Agricultural Chemist.
	Economics Officer.
	Assistant Dairy Bacteriologist.
LONG ASHTON :	Economic Entomologist.
	Economic Mycologist.
	Willow Officer.

The Entomologist and Mycologist are stationed at Long Ashton, as a large proportion of their work is of a horticultural character.

The post of Advisory Agricultural Chemist was filled by the appointment of Mr. A. W. Ling, N.D.A., formerly on the assistant staff of Long Ashton Research Station, on November 12th, 1924, whilst Mr. H. R. Jones, B.Sc., formerly a student in the Department of Botany of the University, was appointed to the new post of Assistant Dairy Bacteriologist on March 9th, 1925. In the Department of Agricultural Economics, Mr. R. W. Hale was appointed as Student Assistant to Mr. Weller on January 19th, 1925, under the scheme of the Ministry of Agriculture and Fisheries.

The number of enquiries dealt with during the year shows a large increase over previous years. This increase is mainly due to the development of the advisory work at Berkeley Square, though there is a slight increase in the numbers dealt with by the Long Ashton staff. This latter fact is significant on account of the transfer of many enquiries to the Berkeley Square Centre, which in previous years would have been dealt with at Long Ashton, and serves to substantiate the view expressed in last year's report that the large amount of advisory work carried out at the Centre will be maintained in future years.

The statistics of enquiries for the past five years are given in the following table, which shows also the numbers received from each of the counties comprising the Bristol Province.

	Year ending September 30th.				
	1921	1922	1923	1924	1925
Gloucester (including Bristol)	73	78	136	137	194
Hereford	22	21	62	107	88
Somerset	96	114	141	130	395
Wiltshire..	10	18	66	24	117
Worcester	45	56	48	78	78
Other areas	125	201	205	195	222
Totals ..	371	478	658	671	1094

Included in the figures under " other areas " are enquiries received from Devon and Monmouth, both of which counties contribute annual grants to the Long Ashton Institute, although not forming part of the Bristol Province. The figures given have reference only to enquiries dealt with by correspondence and do not include the large numbers which are dealt with in personal interviews with farmers on their farms and at the Research Station. The enquiries relating to Agricultural Economics, Willows, and Fruit and Vegetable Preservation are not included in these statistics. Separate reports of the Advisory Officers in the two former subjects are appended, whilst the advisory work on fruit and vegetable preservation is dealt with in the report of the Campden Station.

The Advisory Officers have continued to work in very close cooperation with the County Authorities and have taken an active part in the county experiments throughout the province.

A comprehensive series of spraying trials with tar-distillate washes was carried out during the year in conjunction with the Advisory Officers of the Harper Adams and Bristol Provinces. The trials aroused much interest among the fruit growers of the area.

An important feature of the work at Berkeley Square has been the large amount of work carried out in the Department of Dairy Bacteriology. The Clean Milk Competitions held in the counties of Gloucester, Worcester and Wilts were highly successful, and led to a keen demand for advice on milk.

Excellent progress has also been made in the newly established Department of Agricultural Economics, the main features of which will be noted in the report of the Advisory Officer in that subject.

The following sectional reports serve to show the nature of the enquiries dealt with and the main features of the advisory investigations carried out during the year.

The sections dealing with Agriculture, Agricultural Chemistry, Agricultural Economics, Economic Entomology, Economic Mycology and Willow Culture have been respectively contributed by Dr. J. A. Hanley, Mr. A. W. Ling, Mr. E. P. Weller, Mr. L. N. Staniland, Mr. R. M. Nattress, and Mr. H. P. Hutchinson, the Advisers in those subjects.

NATURE OF ENQUIRIES.

Cider.—The number of enquiries received during the year was 218. The sources of these are indicated in the following table:—

Gloucester	34
Hereford	12
Somerset	48
Wilts	2
Worcester	25
Other areas	97
	218

The advisory work in connection with cider making during the year under review has been marked by a new development. For some time past the Station, in conjunction with the Ministry of

Agriculture and certain County Councils of the West of England, has had under consideration the provision of a scheme of local instruction in cider making. While it has not yet been possible to put the scheme proper into operation, a preliminary scheme was carried out for the cider making season of 1924-25. Under this scheme 13 demonstrations in cider making were given by Mr. Grove in the following counties:—Devon (3), Gloucester (3), Monmouth (2), Somerset (2), Worcester (3). The numbers in brackets indicate the number of demonstrations in each county. During the season, also, several cider factories were visited by him, and a demonstration of the use of a cider filter was given at Arlingham, Glos.

The advisory work for the year has shown certain points to be of outstanding interest at present. There has been frequent enquiry for information as to the best sorts of apples to plant in cider orchards, indicating a definite revival of interest in the planting of vintage orchards. As regards varieties, the question has often been raised as to the value of culinary and dessert apples for cider making, and the possibility of finding an outlet for low-grade apples in this direction.

A further point of frequent enquiry is the means of arresting fermentation of the juice at any desired point. While this is normally done by filtration, the cost of an efficient filter is relatively high, and many small makers are asking for a cheaper form of filter, or for some efficient alternative method.

Among the larger manufacturers it is evident that considerable attention is now being given to the problem of storage of cider after fermentation, and many enquiries have been received in connection with the use of glass-lined cement storage vessels and alternative forms of storage.

The issue of the proposed regulations by the Ministry of Health on the use of preservatives in foods and drinks has brought forward many enquiries on the subject of preservatives in cider, more particularly on the action and amount of sulphur dioxide, this substance being the only preservative to be permitted in future.

POMOLOGY.

The number and sources of the pomological enquiries dealt with are given in the accompanying table:—

Gloucester	14
Hereford	7
Somerset	25
Wilts	8
Worcester	2
Other areas	43
	99

During the year there have been few points of an unusual character arising in connection with the enquiries received through the post. The Station's exhibit at Wembley was responsible for arousing interest in methods for bringing unfruitful trees into bearing, and a number of enquiries on " ringing " and other methods of a similar purpose resulted. The question of the production of alcohol from low-grade apples has been raised, and special attention is being given to the possibilities in this direction.

The investigations on the pathology of the strawberry in progress at Long Ashton have aroused much interest among strawberry growers and brought in applications for advice from all the leading districts where this crop is grown.

The major part of the advisory work on pomology is done in connection with visits to and personal interviews with growers, either on their own farms or at the Institute. This is not recorded in the statistics given, which refer only to enquiries received through the post.

AGRICULTURE.

The special work in connection with the Ministry's Grass Land Campaign has been continued during the summer. Most of the advisory problems requiring visits to farms have resulted from enquiries on the improvement of grass land. The competition on laying down land to grass in Herefordshire has been judged by Dr. Hanley, in conjunction with a local farmer.

Arrangements have been made to work in conjunction with the Bath and West Agricultural Society on the following problems :—

(*a*) Bracken Eradication.
(*b*) Manuring of Acid Pastures.
(*c*) Production of Ground Limestone and Burnt Lime on the Farm.

This work has been carried out hitherto at Long Ashton where the Agricultural Chemist was previously stationed.

AGRICULTURAL CHEMISTRY.

During the year 239 requests for advice were received. The sources of these are shown in the following table :—

Gloucester	52
Hereford	36
Somerset	77
Wilts	61
Worcester	3
Other areas	10
	239

The materials examined include feeding stuffs, manures, limes, etc. and soils.

The following samples have been received :—

Soils	203
Manures	31
Feeding Stuffs	25
Lime	18
Honey	1
Rat Poison	1

The Advisory Chemist has paid 63 advisory visits as the result of requests from farmers for advice concerning :—

Manuring.
Liming.
Crop failures.
Feeding and Foodstuffs.
Poultry.
Rat Destruction.

Many of these visits have been made in collaboration with a member of the Agricultural Staff of the county concerned.

An active part has been taken in the grass land experimental manurial work in the Province and in addition to the above advisory soil samples, 48 soils coming from these grass land plots have been examined.

Several phosphatic manurial trials on grass lands have been established in conjunction with the County Agricultural Staffs in the Bristol Province.

In connection with the liming scheme of the Ministry, one new centre has been laid down in Gloucestershire and one in Worcestershire. Periodical visits have been made to the existing centres in Herefordshire and Gloucestershire.

An investigation has been started to ascertain the economic value of a powdery lime deposit containing approximately 90 per cent. carbonate of lime discovered near Hereford. This deposit seems to be fairly extensive and if the material can be cheaply quarried it should be of considerable value to Herefordshire farming, as there are large areas of " sour " land in the vicinity of the deposit.

At the request of the Poultry Instructor for Somerset an enquiry was made into the cause of the death of many head of poultry in the Shipham district of Somerset. The trouble appeared to be due to the feeding of natural grit from a local lime quarry which contained appreciable amounts of lead sulphide.

A small soil investigation has been made of typical soils in North Wiltshire. In collaboration with a Seed Testing Officer of the Ministry, a study is being made of the feeding value of "deceptive" samples of cereals.

Educational exhibits were prepared for the Three Counties Show at Hereford, the Somerset County Show at Weston-super-Mare and the Wilts County Show at Warminster.

DAIRY BACTERIOLOGY.

The laboratory for the examination of milk samples was equipped and ready for use in January, 1925. It was originally established in order to satisfy the demand for the examination of Clean Milk Competition samples from counties in the Bristol Province. This work has developed very considerably since then and additional equipment became necessary and was obtained in August, 1925. In addition to Clean Milk Competition samples, a number of milk samples have been examined in response to enquiries from farmers who, during the winter, were obtaining milk of unsatisfactory quality.

Milk samples have been examined and advice given to farmers who were desirous of obtaining a licence for the production of graded milk. Visits to farms have been paid in this connection.

The following lists provide details of milk samples examined during the year :—

CLEAN MILK COMPETITION SAMPLES.

Gloucester	65
Worcester	50
Wilts	407

ADVISORY SAMPLES.

SOURCES OF ENQUIRIES.

Gloucester	9
Somerset	155
Wilts	23

NATURE OF ENQUIRIES.

Bacteriological Examination	47
Chemical Analysis only	165

Samples are now received regularly from some producers of "graded milk."

HORTICULTURAL CHEMISTRY.

During the year 62 requests for advice were received. The sources and nature of the enquiries are given below.

SOURCES OF ENQUIRIES.

Gloucester	17
Hereford	5
Somerset	15
Wilts	3
Worcester	8
Other areas	14
	62

NATURE OF ENQUIRIES.

(*a*) *Soil Manurial Problems.*

Orchard and Fruit Plantation soils	18
Market Garden and Nursery soils	7
Garden soils	4
	29

(*b*) *Miscellaneous Soil Problems.*

Soil Conditions causing Chlorosis of Fruit Trees	5
.. .. in cases of Leaf Scorch of Fruit Trees	2
.. .. ,, failure of Fruit Crops	10
.. .. .. ,, Market Garden and Garden Crops	4
Suitability of Soils for Fruit Growing	3
.. .. ,, Market Tomato Growing	3
	27

(*c*) *Miscellaneous Enquiries.*

Manurial Value of Samples of Wood Ashes	2
Agricultural Value of Samples of Lime Materials	4
Value of Stable Manure containing Sawdust	1
Manurial Value of Compound Manures	2
Manurial Value of Samples of Flue Dust	1
,, ,, ,, Banana Refuse	1
Causes of Leaf Scorch on Apple Trees	1
Use of Galvanised Wire Netting over Strawberries	1
Action of Manganese Compounds in Fertilisers	1
	14
Number of visits paid in the course of Advisory Work	11

OBSERVATIONS ON ENQUIRIES.

From the foregoing lists it will be seen that the whole of the enquiries related to problems in connection with the nutrition of fruit trees and other horticultural plants.

The problems did not present any features of a novel character which have not been hitherto encountered in the course of advisory work.

The most interesting of the cases were those concerning crop failures and chlorosis of trees. In all cases of the latter the soils on which the chlorotic trees were growing contained high percentages of carbonates.

SPECIAL INVESTIGATIONS IN PROGRESS.

(1) *Field Experiment on "The Winter Killing of Market Garden Crops."*—This experiment was carried out at the request of the Bristol Market Gardeners' Association in an old-established market garden in Bristol, where winter-killing had occurred for several years. It was shown that the killing did not take place when ample supplies of potash manures were given to the plants. The results of the investigation will be published shortly in "The Journal of Pomology and Horticultural Science."

(2) *Field Experiments on "The Manuring of Fruit Trees, Bush Fruits, etc."* :—

- (*a*) Effect of Dung and Potash on Leaf Scorch (Expts. continued), in Worcester, Hereford and Somerset.
- (*b*) The Effect of Autumn and Spring Dressings of Fertilisers on Apple Trees (Expts. continued), in Worcester.
- (*c*) The Effects of Artificial Manures on Bush Fruits, in Herefordshire.
- (*d*) The Effect of Nitrogenous Fertilisers on Apple Trees under conditions of Poor Cultivation—in Herefordshire.

(3) *Various Experiments with a view to the Control of Lime-induced Chlorosis in Apple and Plum Trees*—in Worcestershire and Somerset.

(4) *Survey of Fruit Soils on the Old Red Sandstone Formation in the West Midlands.*—Laboratory work on the soil samples was continued.

ECONOMIC ENTOMOLOGY.

The number of letters of enquiry dealt with during the year was 171, distributed among the counties as follows :—

Gloucester	35
Hereford	18
Somerset	31
Wiltshire	12
Worcester	24
Other Counties	51
	171
Number of Farms visited	87

This number shows an increase of 58 enquiries on last year. In addition to the above mentioned enquiries, others were received which were referred to the County Authorities. In all cases enquiries from other counties were referred to the Advisory Officers concerned, unless the information was required in connection with special work being carried out at Long Ashton. Much information has been given to growers visiting the Research Station and also in the field, on the growers' own plantations and on farms.

The following were among the most serious pests during the year :—

CAPSID BUGS (*Plesiocoris rugicollis* and *Lygus pabulinus*).

(*a*) *Plesiocoris rugicollis* has been widespread throughout the province, and a fair percentage of the enquiries received during the year have referred to it. The Evesham, Pershore and Cheltenham districts have suffered most severely, whilst bad attacks also occurred in Herefordshire. Damage has been noted in Somerset, but not nearly so serious in that county as in the others.

DAMAGE.

To Apples—Newton Wonder, Cox's Orange Pippin, Worcester Pearmain and Charles Ross, seem to have suffered most, judging from the cases examined. In a number of cases, practically the whole crop has been rendered almost unsaleable. Serious damage has also been done to the shoots by the winged adults during July, shoot growth in some cases having been very severely retarded and numbers of side-shoots pushed out in consequence.

To Black Currants—During July the winged adults migrated to Black currants causing serious damage to the leaves and producing a "temporary reversion." Cases have, however, been observed (notably in the Evesham District and in Hereford) where the damage has commenced on Black Currants in late April and May, which would seem to indicate that the eggs of the Capsid were laid in the shoots of the Black Currant.

(*b*) *Lygus pabulinus*—In the Cheltenham district this has been found, in company with *Plesiocoris rugicollis,* on Black Currants. *Lygus pabulinus* migrated, as far as could be seen, from potatoes to gooseberries and then to Black Currants. *Lygus pabulinus* and *Plesiocoris rugicollis* were both observed feeding on strawberries in July and, together, practically destroyed the crop.

It is realised that the question of Capsid bugs is of the greatest importance. Arrangements have been made during this year for much work on these pests to be carried out during the coming season. Trials made during the year are dealt with in the Annual Report of the Long Ashton Research Station, 1925.

Apple-Blossom Weevil (*Anthonomus pomorum*). This pest has been even worse this year than last, particularly in Somerset and parts of Gloucestershire.

Apple Sawfly (*Hoplocampa testudinea*). Attacks were fairly severe this year. The worst cases have been noted in Gloucester.

Codlin Moth (*Cydia pomonella*). There has been a very marked increase in the number of enquiries in connection with this pest.

Willow Aphis (*Cavariella capreae*). Damage was more serious than usual in Somerset. This has led to work being carried out on it.

Willow Beetles (*Galerucella spp.* and *Phyllodecta spp.*). Cases were very numerous in Somerset.

Strawberry Troubles. Apart from " Red Plant " and " Cauliflower," the chief trouble has been damage by the larvae and adults of the weevil (Otiorhynchus sulcatus). Damage by the larvae of the common Swift Moth (Hepidlus lupulina) has been more general than last year. Reference is made later to Strawberry work.

Pear Midge (*Contarinia pyrivora*). This pest appears to be on the increase. It is hoped to commence some work on it during the coming season. The Evesham district and parts of Gloucester are suffering most from its ravages.

" *Leather-jackets* " (*Tipula spp.*). More enquiries concerning " leather-jackets " have been received this year than during last year, particularly from Somerset. The enquiries have chiefly been in connection with mangolds, sugar beet and barley.

Cabbage Root Fly (*Chortophila brassicae*). This pest has been the source of much trouble in the Evesham district.

Gooseberry Sawfly (*Nematus ribesii*). This year, Gooseberry Sawfly continued to be serious, where no spraying was carried out.

Red Spider. This pest has given much trouble generally, particularly on Plums and Gooseberries.

Mealy Plum Aphis (*Hyalopterus pruni*). Numbers were greatly increased as compared with last year. Parasites, however, considerably reduced them.

Many enquiries were received in connection with tar-distillate washes for winter use, miscible oil sprays for summer use against Capsid bugs and other insects, and " Calcium Cyanide " for glasshouse fumigation.

The remainder of the enquiries dealt principally with the following :—

(*a*) PESTS.

Host Plant.	Pest.
Apple	Apple and Pear Leaf Blister Moth (*Ornix petiolella*)
,,	The Bark-feeding Tortrix Moth (*Semasia woeberiana*)
,,	Woolly Aphis (*Eriosoma lanigera*) and its parasite (*Aphelinus mali*)
,,	Goat Moth (*Cossus cossus*)
,,	Ants
,,	Lackey Moth (*Malacosoma neustria*)
,,	March Moth (*Anisopteryx aescularia*)
,,	Vapourer Moth (*Orygia antigua*)
,,	Winter Moth (*Chaeimatobia brumata*)
,,	Yellow-tail Moth (*Porthesia similis*)
,,	Eyed Hawk-moth (*Smerinthus ocellatus*)
,,	Permanent Apple Aphis (*Aphis pomi*)
,,	Rosy Apple Aphis (*Anuraphis roseus*)
,,	Apple Leaf Blister Mite
,,	Apple Sucker (*Psylla mali*)
Apple, Plum and Black Currant	Clay-coloured Weevil (*Otiorhynchus picipes*)
Plum	Plum Sawfly (*Hoplocampa fulvicornis*)
,,	Leaf-curling Plum Aphis (*Anuraphis prunina*)
Black Currant	" Reversion " and Big-Bud
,, ,,	Aphis (*Capitophorus ribis*)
Raspberry	Raspberry Shoot Moth (*Incurvaria rubiella*)
Pear	Pear Slug-worm (*Eriocampa limacina*)
Celery and Parsnip	Celery Fly (*Acidia heraclei*)
Onion	Onion Fly (*Phorbia cepevorum*)
,,	Cabbage Moth (*Barathra brassicae*)
Field Bean (seed fumigation)	Pea and Bean Weevil (*Bruchus pisi*)
Runner Bean	Bean Aphis (*Aphis rumicis*)
Carrot	Aphis (*Cavariella capreae*)
Chrysanthemum	Eelworm (*Aphelenchus sp.*)
Beet and Mangold	Mangold Fly (*Pegomyia betae*)
Wheat	Ear Cockles (*Tylenchus tritici*)

(*b*) MISCELLANEOUS.

Feeding habits of larvae of Cinnibar Moth (*Hipocrita jacobaeae*).

Wheat Weevils in stored cereals (Calandra).

General damage in gardens and allotments by cockchafer larvae, slugs, snails and millipedes (*Julus pulchellus*).

The possible relations between Tomato eelworm and the Strawberry eelworm.

Fly puparia in milk.

The large red Ichneumon (*Ophion luteus*).

Clothes moths, fleas, *Drosophila sp.* infesting a hospital. Parasitized aphids, hover-fly larvae, Oribatid mites on Plum trees and the destruction of fly larvae in manure.

Grease-banding, combination insecticides, Casein spreaders, liquid soap and spray programmes in general.

FIELD INVESTIGATIONS AND TRIALS CARRIED OUT IN THE COUNTIES.

Capsid Bug (*Plesiocoris rugicollis*). During the year, trials have been carried out in the Cheltenham district against *Plesiocoris rugicollis* on Apples. The following treatments were given :—

1. Tar-distillate washes against the eggs in the winter.
2. Late lime-washing against eggs just before the hatching period.
3. Nicotine.
4. Miscible oil sprays.

The trials have indicated that the most promising line for the control of Capsid bugs lies in the use of certain tar-distillate washes in the winter, followed by miscible oil sprays in the spring. A full account of the trials will appear in the Annual Report of the Long Ashton Research Station, 1925.

Tar-distillate Washes for Winter Use. Trials of five brands of these washes have been carried out in the province in collaboration with the Research Entomologist, the Research and Advisory Mycologists and County Agricultural Staffs. The planning of the individual trials and the application of the sprays was carried out by the Advisory Mycologist and the writer, both of whom examined the trials later in the season. A full account of these results will also appear in the Annual Report of the Long Ashton Research Station, 1925.

The Loganberry Beetle (*Byturus tomentosus*). A trial was carried out in Somerset against this pest, similar to that referred to in the report on the work for 1924. The trial, however, again failed to yield the data required. It is hoped to repeat it at Long Ashton next season. It is anticipated that weather conditions favourable to Lead Arsenate spraying will be obtained more readily at this centre than at centres hitherto selected for such trials.

Plum Sawfly (*Hoplocampa fulvicornis*). A trial was carried out against Plum Sawfly, using Lead Arsenate paste, with a casein spreader, and Lead Arsenate powder with a casein spreader. Unfortunately, the pest was not present in sufficient number to yield any reliable data. The variety of plum on the spot was Heron, and the trees had been very badly attacked in the previous year.

Apple Blossom Weevil (*Anthonomus pomorum*). A trial of a miscible oil spray was carried out in Hereford, the spray being applied on a still, warm day in March at a strength of 4%. It was hoped that under these weather conditions the active weevils might be hit. No data were obtained, as again the pest was not present in sufficient number. Since Apple Blossom Weevil is definitely on the increase, a great effort will be made to repeat this trial under suitable conditions next season.

Trials of "Calcium Cyanide" as a fumigant for greenhouses. Trials of this substance as a fumigant for greenhouses have been carried out at Long Ashton and at several centres in Somerset. The advantages of this material over the Sulphuric Acid—Potassium (or Sodium) Cyanide method appeared to be that a low concentration of hydrocyanic acid gas was given off by contact with the moisture in the house, over a long period, instead of a high concentration over a short period. The conditions for fumigation were the same as for the ordinary acid method. The first trials were carried out at a strength of ¼oz. per 1,000 cubic feet, the material being dusted down the paths of the house. Later, ½oz. per 1,000 cubic feet, was tried. It was found necessary, however, to increase the dose to ⅔oz. per 1,000 cubic feet in order to get a good kill with certainty. It was found that the same number of fumigations as in the case of the acid method were required. There is far less danger to the operator in carrying out the fumigation with Ca. Cyanide than from the use of a cyanide and acid.

So far, fuchsias and tomatoes have been treated, and in no case was any damage to the plants detected.

FIELD AND LABORATORY WORK AT LONG ASHTON.

Willow Aphis (*Cavariella capreae*). As a preliminary to field trials next season, observations on the behaviour of the aphis have been made in the Willow plantation at Long Ashton. Spraying trials with oil sprays have also been carried out both in the plantation and on pot plants, and methods of spraying willows were tried. Full details of the results obtained will be found in the Annual

Report of the Station, 1925. The work has been done in collaboration with the Willow Research Officer and will be continued next year.

Strawberry Aphis (*Capitophorus fragariella*). As the result of infection experiments, evidence has recently come to hand that Strawberry Aphis may be of greater importance than has hitherto been supposed. In addition to infection experiments, observations have been made in the field at Long Ashton and in the counties. The work is being carried out in collaboration with the Research Mycologist, and an account of the investigations carried out up to date will be found in the Station Report for 1925.

Strawberry Eelworm (*Aphelenchus fragariae*). Work on hot water treatment of runners has been continued. (See Station Report for details of this and of the progress made in connection with the general work on *Aphelenchus fragariae*).

Oil Sprays. Since such good results have been obtained with the commercial brand of miscible oil used in trials against Capsid bugs, an investigation of a somewhat wider character has been undertaken. Nicotine being too costly for general use against fruit pests, it is thought that a cheap and equally efficient substitute may be found in the form of an oil spray. A series of oils of a promising nature is being tested against Capsid bugs and as a general contact insecticide. An oil spray which is cheap and efficient, and which the grower can easily mix for himself, is aimed at. A spray likely to fulfil these conditions has been obtained.

AGRICULTURAL AND HORTICULTURAL SHOWS.

In the course of the year exhibits have been staged and attendance made at the Shows listed below :—

Somerset Agricultural Show, Weston-super-Mare.
Wiltshire Agricultural Show, Warminster.
Three Counties Agricultural Show, Hereford.
Cheltenham Floral Fête.
Imperial Fruit Show, Birmingham.

During the above mentioned Shows, much advice was given to a considerable number of growers and farmers.

ECONOMIC MYCOLOGY.

The total number of enquiries dealt with by post during the year was 116.

Sources of Enquiries.

Gloucester	33
Hereford	10
Somerset	44
Wiltshire	7
Worcestershire	16
Other Counties	6
	116

Visits.

Visits paid to farmers and growers, 125.

General Observations on Enquiries.

The number of enquiries shows a decrease of 26 on last year—6 enquiries were received from counties outside the Province as against 28 last year. These six were referred back to the respective provincial advisors. Eight enquiries only were received from farmers, the remainder being from fruit growers, market gardeners, nurserymen and private gardeners. The fall in the number of enquiries is largely due to the absence of any epidemic outbreak of disease such as occurred last year. Many of the enquiries constituted local problems and necessitated a certain amount of laboratory research.

No epidemic outbreak occurred this year of the "Potato Late Blight," the "Chocolate Spot of Beans," or the "Black Currant Leaf Spot" (*Pseudopeziza ribis*), all three of which caused serious loss last year. Observations on the more important diseases are as follows :—

(1) *Black Scab* (*Venturia inæqualis* and *pirina*). The Black Scab diseases of apples and pears (*Venturia inæqualis* and *pirina*) were prevalent, but not so serious as last year. In connection with the above, ripe perithecia of *Venturia pirina*, the pear Scab, were obtained in scabbed leaves that had been exposed in a wire cage over winter. These were also found later on leaves that had wintered naturally in grass orchards.

(2) *Canker* (*Nectria galligena*). Considerable damage has been done by the Canker fungus in girdling young shoots and killing spurs of both apple and pear trees. This form of attack has been very prevalent and widespread.

(3) *Wither Tip of Apples.* (*Monilia cinerea*). An interesting form of Wither Tip of apples was observed in Somerset. In a large mixed orchard many of the trees showed foliage on the young

wood to be withered. Examination showed in each case a canker caused by a bud infection at the base of the withered portion. "*Monilia cinerea*" *was isolated from these cankers.*

(4) *Bacterial Shot Hole of Plums and Cherries.* This disease, reported as new to the province last year (Station report of the Advisory Mycologist, 1924) now appears to have become general; the leaves, young wood and fruit are attacked.

(5) *Ring Spot of Lettuce* (*Marsonia panattoniana*). This disease continues to cause serious loss among market gardeners. Dipping the seedlings in Bordeaux mixture is being tried as a means of control.

(6) *Celery leaf Spot* (*Septoria appii*). Since the war this disease has become serious in the Bristol area. Trials have been carried out by growers, on a commercial scale, of sterilising the seed, spraying the young plants before planting out and again spraying the crop in the field, with satisfactory results.

(7) "*Die-Back*" *Diseases.* The "Die-Back" of apples, plums and other stone fruit trees continues to cause much anxiety among growers, especially nurserymen. Several plantations were visited where trees of all ages had died during the summer. Such cases were generally found to occur in low-lying or unsuitable situations. While *Diaporthe perniciosa* was almost invariably present both in the "Die-Back" from the top of the tree and the infection at ground level, in most cases the root systems of such trees were diseased and the tissues invaded by numerous fungi. It is suggested that this serious outbreak of "Die-Back" is the aftermath of the wet season of 1924. Some contributory cause could in most cases be found, such as root and collar wounds by implements, too deep planting, a hard clay "pan" near the surface, a weak, poorly developed tree (probably unsuitable stock) or a thoroughly unsuitable low-lying situation. Such trees may be attacked months before any visible signs appear. It is the sudden wilting of the whole tree or trees in the orchard that gives the grower so much concern, as a virulent parasite is suspected.

Where soil conditions cannot be ameliorated, great importance is attached to the choice of varieties. Bramley's Seedling and Allington Pippin have been observed to thrive in a damp situation, where the varieties Devonshire Quarrenden and Worcester Pearmain have died. It is only in the advent of an exceptionally wet season, leading to water-logging of low-lying or badly drained land that such susceptible varieties are likely to become attacked by feeble parasites or soil saprophytes.

Several trees in the province have fallen a prey to the two destructive root parasites *Armillaria mellea* and *Rosellinia necatrix.* It is suspected that the latter is more common than is generally supposed.

(8) *Raspberry Diseases.* During the last season a number of enquiries have been received from all parts of the province relating to Raspberry diseases. The symptoms observed are as follows :—

The buds fail to break in the Spring, the canes may produce flowers, but fail to set fruit, or " Die-back " from the tip may be evident. Failure of the buds to break may lead to the development of spindly adventitious shoots from auxiliary buds. Such shoots remain weak and do not make satisfactory growth.

Examination of diseased canes showed fructifications of fungi recorded as having the raspberry as host. Little work appears to have been done on their parasitism and accordingly a rough survey of the fungi found on the raspberry and the disease symptoms was made. The subject was introduced for discussion at the conference of Advisory Officers at Oxford, in June, 1924, in order to obtain more information. Little information was, however, forthcoming.

Though fructifications of *Hendersonia rubi and Coniothryium Fuckellii* were found on diseased canes and were isolated from internal tissue, they are not regarded as being primarily responsible for the observed symptoms.

Didymella applanta (thought to be identical with the Spur Blight, *Mycosphaerella rubina* of America) occurred abundantly from small areas round the buds to large areas covering the whole of the lower part of the canes. In most cases the effect of this fungus seems to be merely superficial.

Even when the fructifications of the three aforementioned fungi were present, isolations from the inner tissue of canes yielded with great frequency *Diaporthe perniciosa.* On examination the crowns of such plants are found to be more or less invaded by fungi, causing in advanced stages a definite " Crown Rot." The plant appears to be incapable of forming the normal plug at the base of the previous season's cane—the fungi, invading which, grow down into the crown. The sucker, still free from disease, is attached to the healthy portion of the crown. It is thought that this later becomes invaded and so brings about the failure of the buds to break in the spring.

In advanced cases of " Crown Rot " fructifications of *Nectria rubi, Ost.* have been obtained and the fungus grown in pure culture (This fungus has hitherto been recorded in the British Isles only from Dublin.) .

Several other fungi have been isolated from diseased crowns and roots, but are thought to be mainly saprophytic.

Mention must also be made of the general attack of the Raspberry anthracnose (*Gleosporium venetum*) especially on Baumforth's Seedling."

The widespread outbreak of raspberry diseases is possibly due in part to the excessive wet of 1924, and in part to lack of vitality brought about by old age, mosaic, and other factors.

The following list indicates the subjects of enquiry and the more interesting diseases not recorded in last year's report.

Host Plant.	Nature of Disease.	Casual Organism.
Apple	Wither Tip	*Monilia cinerea*
,,	Fruit Rot	*Nectria galligena*
,,	White Root Rot	*Rosellinia necatrix*
Pear	Fruit Rot	*Phytopthora sp.*
Plum	Scab	*Fusciladium carpophilum*
Raspberry	,,	*Nectria rubi*
,,	,,	*Didymella applanata*
,,	,,	*Hendersonia rubi*
,,	,,	*Coniothryium Fuckellii*
,,	Anthracnose	*Gleosporium venetum*
Gooseberry	Cluster Cups	*Puccinia pringsheimiana*
Asparagus	Root Rot	*Rhizoctonia crocorum*
,,	,, ,,	*Fusarium sp.*
Potato	"Black Dart"	*Colletotrichum tabaficum*
Mangel	Seedling Disease	*Phoma betae*

Special Investigations carried out in 1924-25.

(1) *Tar-distillate Winter Washes.* Spraying trials with Tar-distillate fluids were carried out in five orchards in the province conjointly with the Research Mycologist and the Entomological Staff. Unfortunately little information as to the effect of these washes on Brown Rot and Wither Tip was obtained, beyond the fact that the 8% washes appeared to be capable of killing the pustules of *Monilia fructigena* on mummied plum where they were actually hit by the wash. No Wither Tip was observed on the controls.

A full account of these trials will be found in the Annual Report of the Station.

(2) *American Gooseberry Mildew.* Spraying trials for the control of the American Gooseberry Mildew were carried out on three plantations in the province.

(3) *Seed Pickling Investigation.* An investigation on the effect of "pickling" on the germination of seed wheat was carried out at the request of the Ministry. Valuable assistance was given

by the County Organisers for Gloucestershire and Wiltshire, who spared no pains to put the Adviser into touch with suitable farmers.

(4) *The Chocolate Spot Disease of Field Beans.* Field and pot experiments were carried out in collaboration with the Agricultural Instructor for Gloucester, following a resolution passed at the Provincial Advisory meeting.

(5) *White Rot Disease of Onions.* A trial of varieties of onion immune to the White Rot Disease *Sclerotium cepivorum* was carried out in collaboration with the Adviser in Agricultural Botany, Manchester University.

In addition to the above, preliminary experiments were carried out on growers' premises on :—

(*a*) Spraying for Apple Scab with Excess Lime Bordeaux Mixture.

(*b*) Spraying with Ammonium Polysulphide and Soft Soap to control the leaf Mould of Tomatoes under glass.

Satisfactory results were obtained and it is hoped to be able to repeat them on a wider scale during the coming season.

Special Investigations to be continued.

(1) *Raspberry Diseases.* The work begun on raspberry diseases will be continued in collaboration with the Research Mycologist. Special attention will be paid to testing the parasitism of *Nectria rubi* and *Diaporthe perniciosa* in connection with "Crown Rot" and "Die-Back."

(2) *Asparagus Disease.* At the request of the asparagus growers in the Evesham district, the work on the control of the Rhizoctonia disease of asparagus carried out by the Station staff during 1915-1916-1918 is being continued.

(3) *Collar Rots of Fruit Trees.* Work is being done on the parasitism and methods of control of the two fungi *Rosellinia necatrix* and *Armillaria mellea.*

(4) *Spraying Trials.* Routine spraying trials against American Gooseberry Mildew and Apple and Pear Scab, and tar-distillate spraying to control Brown Rot and Wither Tip, will be repeated during the coming season on growers' plantations, if suitable ones are available.

Laboratory Work.

Many of the problems dealt with necessitated an amount of isolation and pure culture work. The collection of type cultures has been added to and the following pure cultures have been distributed to other workers.

Nectria rubi
Rosellinia necatrix
Marsonina panattoniana
Diaporthe perniciosa (Special strain)
Thielavia basicola

As a preliminary to work of more economic importance, a study has been commenced of the cultural characteristics of *Rosellinia necatrix*. This fungus has been grown up to the conidial stage in pure culture.

Education Work.

During the last two years, a collection of specimens illustrating common fungus diseases of agricultural and horticultural crops has been made. This collection has been exhibited and demonstrated at the following Shows :—

Somerset Show	at Weston-super-Mare
Three Counties Show	,, Hereford
Wiltshire Show	,, Warminster
Floral Fête	,, Cheltenham

AGRICULTURAL ECONOMICS.

In considering the scope and direction of the work in Agricultural Economics in the Bristol Province, it was clear that a considerable amount of research must necessarily precede and form the basis of any serious attempt at the dissemination of advice on economic problems. At the same time, the primary function of the department necessitated that the lines of research laid down should be such as appeared to lead most directly to the accumulation of data which would be of immediate service to the agricultural industry in the province. These considerations prompted the selection of the economics of farm management as the principal subject of investigation. This subject is of primary importance to the individual farmer who is striving to secure the best results under external conditions which are more or less beyond his control. The Advisory Officers in technological subjects are assisting him towards the attainment of this object, and economics, acting as a co-ordinating principle and directing force, will prove of great value, not only in itself, but in increasing the practical utility of the Advisory Service as a whole.

Moreover, efficient farm management is of fundamental importance in the consideration of other aspects of the industry as affecting the reward of the land owner and labourer, or the place of agriculture in the national economy, and satisfactory solution of problems presented by these considerations must presuppose the efficient utilisation by farmers of the resources under their control. In the investigation of such problems, too, the availability of a considerable proportion of the information required depends upon the goodwill of farmers, and much material valuable for such purposes will be automatically obtained in the study of the economics of farm management.

Having laid down the main lines of investigation it was necessary to determine the method of collecting material and also to develop the technique of dealing with it. Farm costing was adopted as one method of investigation in order to secure a certain measure of uniformity with work proceeding at other centres, and also because this method is, to some extent, appreciated by the more progressive section of the agricultural community. A request having been received from the Somerset branch of the National Farmers' Union for assistance in the investigation of the financial side of farming in that county, eleven farms were selected for costing. These farms together cover an area of approximately 2,812 acres, and they represent five important types of farming. With a view to encouraging the farmers concerned in the use of costing data for checking and controlling operating costs it is proposed to circulate from time to time such comparative data as is available in the accounts. Tables and explanatory notes dealing with the labour costs of operations performed during the past summer have already been circulated. It is anticipated that early information of this kind will prove increasingly valuable, not only to the farmers immediately concerned, but also to others farming under conditions fairly comparable to those under investigation.

It must, however, be recognised that the amount of costing which can be undertaken is relatively insignificant, and its results are therefore necessarily very limited in their scope and application. With a view to developing the work of the department on a wider basis, and securing results which will be of value to a considerable number of farmers within a comparatively short space of time, a method has been devised whereby ordinary financial accounts may be used as a guide to economic farm management, while at the same time providing data which can be used for the investigation of various general problems. The number of farmers who prepare simple statements of accounts for income tax purposes is, perhaps, larger than is generally supposed, and farmers are usually willing to submit these statements for investigation. As soon as a sufficient number have been dealt with the results will be made available for the farmers concerned. With a view to establishing this work on a permanent basis, steps have been taken in conjunction with the Agricultural Officer for Wiltshire to form an agricultural accounting society in that county. A scheme drawn up by a small committee of farmers acting in conjunction with the Agricultural Officer and the Advisory Economist was laid before the County Executive of the National Farmers' Union, which passed (*nem. con.*) a resolution supporting the scheme and recommending it to members. The Agricultural Officer and Advisory Economist are now attending branch meetings of the National Farmers' Union, in order to explain the scheme. The proposal has met with general approval and a considerable measure of active support appears to be forthcoming. It would seem certain that when the utility of simple accounts can be thus demonstrated, the practice of book-keeping on sound lines will receive a considerable stimulus and the adoption of some form of costing by at least some members of the Society may quite well prove to be a later development.

With regard to other aspects of the work in agricultural economics a few requests for advice and assistance on questions relating to costing, book-keeping and economic problems have been received and dealt with. Local agricultural shows have been attended and notices and diagrams exhibited.

In addition to addressing a large number of meetings in connection with the schemes outlined above, the Advisory Economist has delivered lectures and read papers as particularised below.

"Agricultural Costing—An Aid to Farm Management."—The Surveyors' Institution, London.

"The Economic Aspect of Wintering Cattle for the Production of Farmyard Manure."—The Agricultural Education Association, London.

"Farm Management for Profit."—Swindon Agricultural Discussion Society.

"Farm Management for Profit."—Young Farmers' Class, Wotton-under-Edge. (Two lectures).

"Agricultural Costing."—The Land Agent's Society, Gloucester.

"Rates, Taxes and Tithes on Agricultural Land."—East Harptree Branch of the National Farmers' Union.

"Rates, Taxes and Tithes on Agricultural Land."—Wincanton Branch of the National Farmers' Union.

"Rates, Taxes and Tithes on Agricultural Land."—Bridgwater Branch of the National Farmers' Union.

The following articles written by the Advisory Economist have been published during the year :—

" Agricultural Costing—An Aid to Farm Management."—Transactions of the Surveyors' Institution, Vol. LVII. Part 1.

" The Value of Costing in Estimating and Controlling Expenditure."—Journal of the Land Agents' Society. Vol. XXIII. No. 2.

" Farm Income Tax Assessments."—Journal of the Land Agents' Society, Vol. XXIV. No. 5.

" The Economic Aspect of Wintering Cattle for the Production of Farmyard Manure."—Agricultural Progress,Vol. II. 1925.

" The Cost of Wintering Cattle for the Production of Farmyard Manure."—The Journal of the Ministry of Agriculture. Vol. XXXI. No. 12.

" Farm Problems."—The Western Morning News and Mercury Agricultural Supplement, 1925.

WILLOW CULTURE AND THE UTILIZATION OF WILLOWS.

Condition of Crops and State of Trade.

The area of land in the country under basket willows appears to be stationary. Established growers have maintained their acreages, and have replaced grubbed beds by new planting. Small beds have been laid down for trial purposes by new growers in new districts in Northumberland, Berkshire and Pembrokeshire.

The dry weather in June of 1925 checked the growth of the willow crops in most parts of the country, and although favourable growth periods occurred later in the summer, the yields of rods from the current year's crops will be below those of 1924. The consequence will be that the Basket-making industry will find a shortage in English grown rods of the large sizes.

The willow growers are benefiting by a steady progressive increase in the price of rods, due to the increased industrial requirements in basketry. No surplus of the 1924 crop remained on the growers' hands, and willow merchants and basket-makers, as far as the 1925 crop is concerned, are desirous of buying forward.

A new feature in the willow growing industry of the country has been the introduction of Continental buyers of certain varieties of English-grown rods. The Willow Officer was informed by a Lancashire willow grower that at least 20 tons of rods had been sold to German buyers from the Ormskirk district for export at prices between £70 and £80 per ton.

Enquiries.

The total number of enquiries answered during the year was 99, distributed as follows :—

Gloucester (including Bristol)	8
Hereford	1
Somerset	26
Wiltshire	2
Worcester	7
Other areas	55
	99

Advice was given on land and crop cultural management, selection of varieties for planting, the obtaining of cuttings, the marketing of rods, the Cricket Bat Willow culture, and on the treatment of insect and fungus attacks. Land was inspected with a view to willow planting in Worcestershire (2) ; Somerset (2) ; Berkshire (1) ; and Wiltshire (1). The figures in brackets refer to the numbers of cases dealt with in each county. Special advice was given in the cases of Sewage Farms at Didcot and Street, and information was supplied to the Rural Industries Bureau and to the Rural Industries Officer for Somerset on various problems connected with the willow-growing and basket-making industries.

Cuttings for trial purposes were supplied from the Station's Experimental Trial Plots to growers in Worcester and Somerset, and consignments of cuttings were exported to :—

The Botanic Garden, Sydney, N.S.W.
The Ministry of Agriculture, Sydney, N.S.W.
The New Zealand Government, Wellington.
Canada.

Thirty-three willow growers and basket makers visited the Trial plots.

EXPERIMENTS ON THE CONTROL OF AMERICAN GOOSEBERRY MILDEW.

By R. M. Nattrass.

As the American Gooseberry Mildew has become a serious menace to the cultivation of the Gooseberry in the Bristol Province, experiments on the control of this disease are now being carried out under the Advisory Scheme of the Ministry of Agriculture.

The following is an account of a trial carried out during the spring and summer of 1925.

The Plots.

The bushes used were of the variety " Winham's Industry "—this variety being particularly susceptible to the mildew and fairly resistant to spray injury. They were average well grown bushes eight years old, and had been planted in four blocks, twenty-five feet apart, two rows in each, the individual bushes being six by four feet apart. Standard plum trees were growing in between the two rows of bushes in each block.

Each of the four blocks consisted of 48 bushes. The central eight bushes in each block (32 in all) were not sprayed, and these served as a control plot, which traversed the four blocks at right angles. The remaining 40 bushes in each block, twenty on each side of the control, constituted the four plots which were sprayed with the four washes.

Spray Fluids Employed.

The following four spray fluids were used, made up to the formulæ given below.

A. AMMONIUM POLYSULPHIDE AND SOFT SOAP.

Ammonium polysulphide (1919 formula)	4 pints.
Soft Soap	5 lbs.
Water, to make up to	100 gallons.

B. PROPRIETARY SODA-SULPHUR COMPOUND AND SOFT SOAP.

Soda-sulphur compound	10 pints.
Soft soap	5 lbs.
Water to make up to	100 gallons.

C. WASHING SODA AND SOFT SOAP.

Washing soda	19 lbs.
Soft soap	11 lbs.
Water	100 gallons

D. BURGUNDY MIXTURE.

Copper Sulphate	15 lbs.
Washing soda	3–4 lbs.
Water	100 gallons

Application of Spray Fluids.

The washes were applied by means of a hand pumped " Rapid " spraying machine, working at a pressure of 60-80 lbs., the nozzle used producing a medium-fine misty spray. Particular care was taken to spray the lower parts of the bushes and, as far as possible, the under sides of the leaves. To ensure uniform treatment all spraying was done personally by the writer.

The sprays (A), (B) and C) were applied on April 28th, immediately after the setting of the flowers, at which time no sign of the disease was visible on any part of the bushes.

The second application of (A), (B) and (C) and the first application of (D) took place on June 5th. At this time the mildew had appeared on the control plot and on the plot (D).

Results.

The fruit from the various plots was picked on June 23-25th., the fruit from each plot being picked separately. It was sorted into two grades—clean and mildewed berries—which were then weighed. The fruit from the control plot was treated similarly.

The following table gives the weight of clean and mildewed berries from each plot.

Spray used.	Clean Fruit. lbs.	Mildewed Fruit. lbs.	Percentage Mildewed Fruit by weight.
A. Ammonium polysulphide and soft soap.	90	4	4.2
B. Soda-sulphur compound and soft soap.	132	3	2.2
C. Washing soda and soft soap.	92	4½	4.5
D. Burgundy Mixture.	94	27	22.3
Control. No spray.	36	28	43.7

Remarks.

From the above table it will be seen that the sprays (A), (B) and (C) have all given very good results, but it is not considered that the trial was on a sufficiently large scale to obtain figures so free from experimental error as to permit of an accurate determination of the *relative* efficacy of the three sprays. Further trials are necessary before definite conclusions can be arrived at. The time of the first application of the sprays, *i.e.*, as soon as the flowers had set, is considered important. At this date (April 28th) no sign of the disease could be seen, yet it would appear that small infection centres, originating from the winter spores, must have been present though invisible to the naked eye, since the control bushes were heavily infected before the second application was made (June 5th). In the case of plot (D) in which the first application was not made until after the mildew had become visible, only a comparatively poor control was obtained. It is essential, therefore, that fruit growers should not wait until the disease can be seen before commencing to spray.

It is obvious that the spray (D) Burgundy Mixture was applied too late to check the disease effectively; it is possible that this would be an efficient spray if applied three or four weeks earlier. When applied after the berries are half grown, the latter are rendered unsaleable owing to the visible deposit on their surfaces.

The spray (C) Washing Soda and Soft Soap was tested because this, if always efficient, would be a valuable and economical wash for use with certain varieties which were damaged by the sulphur-containing spray-fluids. Further, it is readily made up by small growers and private gardeners, the ingredients being common household commodities. Trials made with Soda in Russia several years ago also gave promising results, and it has previously been used in this country by Mr. Landsell, late of the Worcestershire Horticultural Department, from whom the formula was obtained.

No spray damage was observed on any of the plots, and the same holds good for the variety " Keepsake " which was sprayed with similar materials at another centre.

The plots were again inspected on October 7th, when it was found that on the control plot and on plot (D) many of the tips were brown with mildew, whereas, on Plots (A), (B) and (C) they still remained clean.

In conclusion, the writer is greatly indebted to Mr. Frank May, of Cheltenham, on whose plantations the trial was carried out, for giving every facility and for supplying labour and machinery; and also to Mr. G. H. Hollingworth, Agricultural Organiser for Gloucestershire, for his valuable help in selecting a suitable plantation.

REPORT ON SEED "PICKLING" INVESTIGATION.

R. M. Nattrass.

In November, 1924, a request was received from the Ministry that the enquiry as to the effect of pickling on the germination of seed wheat should be continued. The Advisory Mycologist was asked to collect from farmers, samples of seed wheat, before and after treatment with different pickles or with the same " pickles " at different rates. The treated samples were all drawn from bulk which had been actually pickled on the farm.

The samples were obtained from the following counties :—

Gloucestershire	6 samples
Wiltshire	5 ,,
Somerset	1 sample

The germination of the treated and untreated samples was tested by the Seed Testing Station of the National Institute of Agricultural Botany.

The table below gives, under various heads, particulars of the samples tested, together with germination data. The extreme right-hand column gives the percentage difference in germination between the treated and untreated samples. The information is set out in the order in which the treatment has affected the germination.

GERMINATION OF SEED WHEAT.

No.	Treatment	Variety.	Germination %				
			Days Count.				
				5 days.	7 Days.	Final.	
1.	1 lb. of copper sulphate per sack dissolved in enough water to damp the whole.	Little Joss.	Untreated	61	65	67 in 14 days 68	+ 6%
			Treated	65	69	73 in 15 days 74	
2.	" Corvusine."	Red Standard	Untreated	69	83	98	+ 0%
			Treated	63	84	92 in 14 days 98	
3.	" Formalin "—1 tablespoonful to 1 gallon of water. 1 gallon of solution to 1 sack of wheat.	Snow-drop.	Untreated	78	94	95	+ 0%
			Treated	74	92	95	
4.	"Formalin"—1 oz. to 3 gallons of water. 2 gallons of solution to one sack of wheat.	Little Joss.	Untreated	78	97	98	– 1%
			Treated	75	95	97	
5.	" Formalin "—1 tablespoonful to 2 gallons of water. 2 gallons of solution to 1 sack of wheat.	" Square-heads " Master	Untreated	80	97	97	– 2%
			Treated	76	93	95	
6.	1lb. of copper sulphate to 1 gallon of water—1 gallon of solution to 6 bushels of wheat.	Red Standard	Untreated	80	85	87	– 3%
			Treated	70	79	84	
7.	Tar-lime—the seed was treated with a small quantity of tar and then with lime to prevent the seed sticking.	Red Standard.	Untreated	40	80	96	– 6%
			Treated	55	80	90	
8.	¾ lb. copper sulphate to 1 gallon of water—1 gallon of solution to 1 sack of wheat.	" Square-heads " Success.	Untreated	86	96	98	– 9%
			Treated	70	83	89	
9.	" Corvusine "—1 gallon to 12 bushels of wheat.		Untreated	88	95	96	– 10%
			Treated	49	71	86	
10.	1 lb. of copper sulphate to 1 gallon of water--1 gallon of solution to 1 sack of wheat. Lime was mixed with the damp seed just before it dried.	Victor.	Untreated	88	96	98	– 10%
			Treated	83	86	88	
11.	1 lb. of copper sulphate to 1 gallon of water—1 gallon of solution to 1 sack of wheat, followed by Gregory's Gottem.		Untreated	66	91	93	– 21%
			Treated	13	37	55 in 18 days 72	

REMARKS.

It will be seen that with the exception of samples 1, 2, and 3, the treatment in each case had a depressing effect on the germination—more so in the case of Copper Sulphate than in the case of " Formalin."

No. 1. Copper Sulphate caused an increase of 6% in the germination of an exceptionally poor sample.

The " Formalin " treatment only had a small effect on the germination of from 0 to — 2% (Samples 3, 4 and 5).

The effect of Copper Sulphate varied from —3% to —21%. but in no case was more than 1 gallon of the solution used to 1 sack of wheat. Had 2 gallons per sack been used, which is considered necessary thoroughly to wet the whole, the depressing effect would have been much greater. In the case of formalin with 2 gallons of solution per sack, the effect is only very slight.

The fields were visited at harvest time, but no sign of bunt could be seen on any of the crops.

It is hoped that the standard method of treatment of seed wheat with formalin will become general.

WHITE ROT DISEASE OF ONIONS—IMMUNITY TRIALS.

By R. M. Nattrass.

At the Advisory Conference held in December, 1924, Advisors were asked to assist Mr. E. Holmes Smith in the testing of varieties of onions immune to the White Root Rot disease, *Schlerotium cepivorum.*

Through the kindness of Mrs. A. Fox, of Brislington House, Bristol, permission was obtained to sow the different varieties on a plot of land which was badly contaminated with the White Rot disease.

The seed for this test was supplied by Mr. E. Holmes Smith.

Two rows, eight yards long, were sown of each variety.

Owing to the exceptionally dry season, only the very susceptible varieties were slightly attacked.

The seed was sown on March 16th, 1925, and the crop was lifted on September 16th, 1925.

The list below gives the variety and the number of diseased bulbs in each row.

No. of Row.	Variety.	Susceptibility	No. of diseased bulbs.
1	Cranston's Excelsior No. 4	Very susceptible	2
2	Magnum Bonum ,, 1	Immune	0
3	Cranston's Excelsior ,, 8	Very susceptible	1
4	Selected Coconut ,, 3	Immune	0
5	A.1. ,, 7	Slightly susceptible	0
6	Selected Red ,, 5	Immune	0
7	Cranston's Excelsior ,, 4	Very susceptible	2
8	Ailsa Craig ,, 6	Very susceptible	0
9	Magnum Bonum ,, 1	Immune	0
10	Cranston's Excelsior ,, 8	Very susceptible	0
11	Strasburg ,, 2	Very susceptible	1
12	Ailsa Craig ,, 6	Very susceptible	1
13	Selected Coconut ,, 3	Immune	0
14	Strasburg ,, 2	Very susceptible	2
15	Selected Red ,, 5	Immune	0
16	A.1. ,, 7	Slightly susceptible	0

TAR DISTILLATE WASH TRIALS IN THE BRISTOL PROVINCE.

By A. H. Lees.
L. N. Staniland.

During the last four years numerous experiments have been made at the Research Station in connection with tar distillate washes. The work at first was chiefly small scale experiments, but a few field trials were also included. Towards the end of 1924 it was felt that the time had come for much more extensive trials to be done. With the co-operation of the various County Staffs concerned, an extensive programme was devised and the results are embodied below. The main object of the experiment was to obtain precise information on certain proprietary brands recently put on the market which, for the purpose of this article, are lettered A-E. A similar series of trials were made at the same time in the West Midland Province by the Harper Adams Agricultural College in conjunction with the County Staffs of Shropshire, Staffordshire and Warwick. The results were almost identical with those obtained for the Bristol Province.

In the Bristol Province seven different plantations were included, two in Gloucestershire, two in Herefordshire, one in Somerset and two in Worcestershire. Most of the trees treated were apples, but plums were also represented.

In order to minimize experimental error the plots were chequer-boarded where possible. Each sub-plot, in such cases, consisted of either four or six trees, and the same treatment was given to three separate sub-plots scattered in different parts of the whole plot.

Two strengths for each brand were used, 4% and 8%. For the purpose of estimating results every tree of every plot was inspected by two independent observers.

It was originally intended that observations on the effect of these washes on fungus diseases should be made at the same time as those on insect pests, and the co-operation of the Advisory Mycologist was obtained. Unfortunately, conditions did not admit of positive results being secured for fungus diseases, and, accordingly, the results below apply only to insect pests.

DESCRIPTION OF PLANTATIONS AND TRIALS.

Place of Plantation.	Fruit.	Arrangement.	Time of Application	Date of Exam.
Huntley, Glos.	Plums. Blaisdon.	Chequered. Plots of 4 trees 3 times repeated.	Feb. 2-3.	Apr. 27.
Evesham, Worcs.	Plums. Pershore & Victoria.	Chequered. Plots of 4 trees 3 times repeated.	Jan. 19-20	May 1.
Hambrook, Glos.	Apples Mixed	Chequered. Plots of 4 trees 3 times repeated.	Feb.1819-	May 11.
Marden, Hereford.	Apples Newton Bramley.	Treatments in rows Control chequered.	Feb. 27.	May 13.
Holmer, Hereford.	Apples Mixed.	In rows.	Mar. 2.	May 13. No pests present
Wiveliscombe, Som.	Apples Mixed.	Chequered. Plots of 6 trees 3 times repeated	Feb. 10-12	May 15
Bransford, Worcs.	Apples. Mostly Worcesters.	In rows.	Jan. 13.	Ap. 30

In the tables showing the effect of the sprays a marking has been given to indicate the prevalence of each pest under observation. The maximum marking is 10 and represents "very bad." A "trace" is represented by the marking 1, "slight" by 3-4, "moderate" by 5-6, and so on.

The column marked average represents the average marking for the particular pest concerned.

BRISTOL DISTRICT.
PLUM TRIALS.

	4% Strength.						8% Strength.					
	Aphis.			Caterpillar.			Aphis.			Caterpillar.		
WASH.	E.	Hu.	Av.	E.	Hu.	Av.	E.	Hu.	Av.	E.	Hu.	Av.
Control	1	1	.5	1.3	2	1.7			.5			1.7
A.	0	0	0	1	2	1.5	0	0	0	1	0	.5
B.	0	0	0	2	0	1.0	0	0	0	1	0	.5
C.	0	0	0	1	1	1.0	0	0	0	1	0	.5
D.	0	1	.5	1	2	1.5	0	0	0	1	1	1.0
E.	1	2	1.5	2	2	2.0	0	0	0	1	2	1.5

The names of the places are indicated by letters. B—Bransford, E—Evesham, H—Hambrook, Hu—Huntley, M—Marden, W—Wiveliscombe.

APPLE TRIALS.
8% STRENGTH.

	APHIS.					PSYLLA.					CATERPILLAR					CAPSID.				
WASH.	H	M	W	B	Av.	H	M	W	B	Av.	H	M	W	B	Av.	H	M	W	B	Av.
Control	8	.6	2	4	3.6	6	9.2	2	9	5.2	4	5.2	2	1	3.0	2	3.2	4	3	3.0
A.	0	0	0	0	0	0	0	0	0	0	2	2	1	0	1.2	0	0	0	2	.5
B.	0	0	0	0	0	0	0	0	1	.2	3	1	1	0	1.2	0	1	1	2	.7
C.	0	0	0	1	.2	1	0	0	2	.7	2	2	1	0	1.2	1	1	2	1	1.2
D.	0	0	1	2	.7	2	0	0	3	1.2	2	2	1	0	1.2	2	1	4	2	2.2
E.	1	0	2	5	2.0	4	6	1.5	8	4.9	4	4	1	0	2.2	2	4	4	3	3.2

APPLE TRIALS.
4% STRENGTH.

	APHIS.					PSYLLA.					CATERPILLAR.					CAPSID.				
WASH.	H	M	W	B	Av.	H	M	W	B	Av.	H	M	W	B	Av.	H	M	W	B	Av.
Control	8	.6	2	4	3.6	6	9.2	2	9	5.2	4	5.2	2	1	3.0	2	3.2	4	3	3,2
A.	0	0	0	0	0	0	1	0	0	.2	3	4	2	0	2.2	0	1	2	2	1.7
B.	0	0	0	0	0	0	0	0	1	.2	3	2	2	0	1.7	0	2	–	2	1.3
C.	0	0	1	1	.5	1.5	0	0	3	1.1	4	2	1.5	2	2.4	2	2	4	1	2.2
D.	0	0	2	3	1.2	2	1	0	7	2.5	–	4	2	0	2.0	2	2	4	2	2.5
E.	2	0	2	7	2.7	6	8	0	9	5.7	4	6	2	0	3.0	2	4	4	3	3.2

* As two varieties, Bramley and Newton, were present at Marden, separate controls were kept for each variety. This necessitated the use of decimals to express the average control.

CONCLUSIONS.

Plums.

Effect of 8% strength :—

Aphis.—The attack was never more than a trace, which was effectively dealt with by all brands.

Caterpillar.—The attack was very slight. Washes A, B and C made an effective reduction in numbers while the effect of D and E was barely distinguishable.

Effect of 4% strength :—

Aphis.—All brands were effective except D and E.

Caterpillar.—No marked result was obtained, washes B and C being the best.

Apples.

Effect of 8% strength :—

Aphis.—The controls were slightly attacked. Washes A, B and C gave practically complete control, the result with D was good, E had but a slight effect.

Psylla.—The controls were moderately attacked. A and B gave practically complete control, C a good control, D was rather less effective than C, and E was ineffective.

Caterpillar.—The controls were slightly attacked. All except E reduced the infestation by rather more than half.

Capsids.—The controls were slightly attacked. A and B very considerably reduced the infection, C reduced it to less than a half, while D and E did no material good.

Effect of 4% strength :—

Aphis.—Washes A and B were as effective at this strength as at 8%, C was only slightly less effective. D had some action, and E very little.

Psylla.—A and B were practically as effective as at the 8% strength. C gave good control, D reduced the infection to a half, and E had no apparent action.

Caterpillar.—No satisfactory control was obtained with any brand, and the comparative merits are shown by the figures in the table.

Capsids.—The control effected at this strength by even the best brand was not more than moderate. The figures in the table give the relative order.

CONCLUSIONS AS TO GENERAL EFFICIENCY OF THE WASHES.

When considering the value of a wash to the fruit grower it is not advisable to confine attention to any one pest, however important. It may well be that one pest may be completely or nearly completely controlled by a wash which may be of little service in controlling other pests. In such cases, its ultimate value to the grower reckoned in profit accruing from its use may be a small one, and another wash, giving less complete control of the pest first considered, but more complete control of other pests may, in the long run, prove to be the better when considered purely from the financial point of view. In these trials, both A and B washes have given very good results, and, taking the broad view, it is difficult to distinguish between them. Against Caterpillar and Capsids at 4% strength the washes were not of much use, but at 8% considerable control of Capsids and partial control of Caterpillar were effected. It should be noted, however, that it is quite possible that some moths laid eggs after the application of the wash. No attempt was made to distinguish different kinds of Caterpillars.

On the question of possible damage, these trials have not given very clear evidence. In some cases flowering appeared to have been stopped by the wash used. A closer examination afterwards, however, suggested that other causes had been at work, causes quite independent of spraying, but sometimes working in the same direction.

No doubt the time of application is important, especially in the case of plums, though it is not possible to draw any exact conclusions from these trials. The writers, however, hold the opinion from the experience gained in this work that plums should not be sprayed later than the middle of January, and apples not later than the end of February.

On the whole, in these tests the two brands A and B proved themselves clearly superior to the others which were tried.

It should, however, be clearly understood that these results refer only to the particular samples used and to the particular season (1924-25) in which they were tried. From the nature of the case it is impossible to obtain from one year's trial information that is directly applicable to the following year. There is no certainty that a wash that is good one year will be good the next year. Experience has indeed shown that in some cases the opposite takes place, and that, therefore, it is impossible to give a grower advice founded on one year's trial only. Nevertheless, cumulative evidence should be given due weight and brands that give consistently good results year after year merit a higher recommendation than those not doing so. To technical officers at the Research Station there are also other sources of information available, and it is often possible for them to give reliable advice to any inquirer, though such advice cannot always be entirely based on statistical data. For this reason, therefore, it is suggested that growers requiring further information on this matter should communicate with the Research Station.

PROGRESS REPORT ON APPLE ROOT STOCK INVESTIGATIONS.

By G. T. Spinks.

On the last occasion on which these investigations were dealt with in the Annual Report, viz., in that for 1917, it was stated that it was probable that there would be little of material interest to report upon for some years, since they would be mainly occupied with propagation of the selected root stocks to secure numbers of each sufficiently large for the programme of trials. This propagation phase of the investigation is now drawing to a close, and a start is being made with the trials proper. This forms, therefore, a convenient occasion to summarise the work so far as it has progressed since the last account of it was given.

It should be recalled that in 1913 the Research Stations at East Malling and Long Ashton arranged a joint investigation of apple root-stocks, and while the East Malling Station proceeded to examine the " Paradise " stocks this Station undertook the study of " free " and " crab " stocks. In the Long Ashton Report for 1917 an account was given of the Long Ashton studies of the root-systems of a large number of seedling stocks. As a result of that examination the stocks were divided into classes, each of which seemed to have a characteristic type of root-system. At the same time it was found that a number of stocks showed signs of producing adventitious roots very readily, and it was thought that they could probably be propagated by layering. Stocks of this apparently free-rooting type appeared in most of the classes.

A selection of stocks was then made containing several representatives of each class, most of those chosen being also apparently likely to root freely. In all, about 60 stocks were selected for further study.

During the next two or three years these stocks were grown on and attempts were made to propagate them by "stooling" or "layering." It was found that some were only propagated with difficulty, and these were discarded. Others were discarded on account of their thorny character, which made them unsuitable for nursery operations. Ultimately it was decided that seventeen of the selected stocks should be propagated for further trial. A larger number were quite suitable for this purpose but, in order to prevent trials becoming unwieldy, it was necessary to cut down the numbers as far as possible while retaining sufficient representatives of the different classes of stock.

It was found that layering was the most convenient method of propagating the stocks, and it has been quite successful with most of the selected forms. However, as each stock was, after its selection, simply one individual plant, a number of years were required in which to establish productive stool-beds of each stock. It was not, therefore, until 1923 that enough young plants of each stock were available for working with a market variety of apple in order to start a trial of the influence of the stocks.

In 1923 all the available young stocks were budded with the variety Lane's Prince Albert.

In 1924 and 1925 stocks have been worked with Worcester Pearmain, James Grieve, Newton Wonder, Blenheim Orange and Bramley's Seedling.

The different stocks vary in strength, and it is proposed to use the 12 weaker kinds of stock for a trial in which the trees will be grown in bush form in cultivated ground. The varieties to be used in this trial are Lane's Prince Albert, Worcester Pearmain and James Grieve. Trees of the same varieties worked on Type 2 Paradise stock are being used as " controls " in this trial. Some trees on the stronger stocks of the series are also being included in this trial, but Lane's Prince Albert is the only variety worked on these stronger stocks, the other two being regarded as too vigorous.

One of the objects of testing these layered " free " stocks is to find, if possible, a stock which is suitable for the production of standard trees and is also capable of being propagated by vegetative means. If this can be found standard trees can then be provided on uniform stocks, even as smaller trees are grown on uniform dwarfing stocks. Therefore the eleven stronger stocks of the series are being used for a trial of standard trees of the varieties Worcester Pearmain, Newton Wonder, Blenheim Orange and Bramley's Seedling. Standard trees grown on Type 12 " Paradise " are being included in this trial as a " control." This trial is arranged in duplicate with the trees under clean culture and in grass respectively. Some of the series of stocks are included in both the bush and the standard trials, as the relative strength of all the stocks is not yet known with certainty.

The first part of the trial plantations was planted out in November, 1925. This consisted of eight two-year-old trees of Lane's Prince Albert on each of the stocks, all the trees being planted 15ft. apart. The plot was checker-boarded so as to distribute each stock as evenly as possible over the area and thus to minimize errors due to differences in the soil. The trees had been cut down as maidens in the nursery to form bush trees on a uniform length of leg. The trees on each stock which were planted out were selected as being as uniform and representative of the trees on that stock as could be found in the nursery. Adjoining plots will be planted up next winter with two-year-old bush trees of Worcester Pearmain and James Grieve.

Meanwhile, in the nursery, trees of the other varieties named above are being run up to form standards and will be planted out, probably when four years old, when good heads are formed.

Records of each tree are being kept from the time the stock is planted in the nursery. These include various weights, measurements of growth, and amount of blossom and crop.

The number of trees on each stock in the bush trial already started is small, but is unfortunately limited by the amount of land available. The records which are being taken in the nursery on larger numbers of young trees may give enough information before planting-out time to justify the omission of some of the stocks from further trials, and thus allow larger numbers of trees on each selected stock to be included. It is hoped in any case to arrange series of duplicate trials at other centres so that the cumulative results may provide conclusions of greater certainty than the limited initial trial will allow.

The lifting of the Lane's Prince Albert trees from the nursery for planting out has afforded an opportunity for examining their root-systems. As far as can be seen at present the type of root-system on some of the stocks appears to differ to some considerable extent from that noted on the parent plants from which they originated. This point will need further investigation when more trees are lifted.

SEEDLING STOCKS.

The view is held by some that a layered stock will never be as suitable as a seedling stock, grown from a pip, for the growth of a large standard tree. Some further, are strongly of opinion that even a seedling " free " stock is unsuitable for this purpose and that a seedling from a " true crab " is required. These points cannot be proved or disproved on existing evidence, but it is clear that in spite of this it must not be assumed that seedling stocks could or should be entirely discarded in favour of layered stocks. Seedling stocks can be more easily and cheaply produced than layered stocks. There is some evidence, too, that differences in stock influence amongst seedling stocks are often largely obliterated by the influence of the scion variety and the conditions under which trees are grown.

It seems, therefore, desirable that the possibilities of seedling stocks should be explored at the same time as those of layered stocks, and one of the main points to be considered is the degree of uniformity which can be obtained in seedling stocks. Several experiments designed to test this point are now in progress.

Methods by which greater uniformity may be obtained appear to be :—

(i) The use of seed from known parents, preferably from trees, if any can be found, which will breed true from seed.

(ii) Grading the seedling stocks, especially as regards size and the character of the root-system.

The first experiment at Long Ashton on this aspect of the root-stock problem has consisted in the use as stocks of about 120 apple seedlings which had been raised from the seed of seven different varieties of apple, the seedlings from each variety being kept separate. All these seedlings were grafted at the same time with one variety of apple, Stirling Castle. The size of the individual stocks was noted, and later, when the young trees were planted out, the character of the root-system of each. It is intended that the trees shall receive the treatment they would receive at the hands of a good grower. Each tree is to be treated according to its merits, no attempt being made to give absolutely uniform treatment to each tree. General observations are being made on the growth of the trees from time to time. The trees, which are being grown as bushes, were planted in a permanent plantation when two years old, and are now four years old.

In a second experiment 150 miscellaneous "free" stocks are being employed. These are stocks of unknown parentage, bought from a raiser of stocks. Before planting in the nursery they were graded in respect of their size and the character of their root-systems. They have all been budded with Bramley's Seedling. The resulting trees will all be kept under observation in the nursery, and as many as possible will afterwards be planted out and will be the subjects of further records.

A third experiment is being carried out with seedlings from several varieties of crabs which appear to breed fairly true, at all events when growing in isolated situations. Up to the present only one variety of seedling crab has been worked. The seedlings have been treated as in the previous experiment. The stocks when worked appeared, with a few exceptions, very uniform in character, though they varied considerably in size. Seedlings from a second variety of crab are now ready for transplanting and grading and will be worked later. Seed of other varieties of crab is being sown, and will provide further batches of seedlings.

It will readily be seen that one of the chief difficulties in carrying out these experiments is the large number of trees necessary, and consequently the large area of land required, in order to obtain significant results. It is also obvious that experiments with standard trees require many years for their completion, and that the land occupied by them is unavailable for other purposes during that period. The scale upon which they can be conducted will thus depend upon the resources at the disposal of the Station.

PROGRESS OF FRUIT BREEDING.

By G. T. Spinks.

The work on this subject has been continued on the lines indicated in the Reports of 1920 and 1921. Since that time fewer new seedlings have been raised, and they have mainly been produced by the repetition of previous crosses, in order to increase the size of certain families of seedlings ; but a few new combinations of parents have also been tried.

The chief work, however, has been the observation of existing seedlings and the selection and propagation of those which seemed likely to be of value. The progress of the work with the various fruits is summarised below :—

APPLES.—There are now in the plantations about 1,800 seedling apples, of which about 700 are the product of open-pollinated seed ; that is to say, only the female parents of these are known. The remaining 1,100 seedlings are the result of controlled pollinations and are mainly crosses, though in a small number of cases the female parent was self-pollinated. Some of the earlier seedlings were grafted on Type 1 Paradise stock, others have been worked on more dwarfing stocks, such as Types 8 and 9, while a number have been head-worked on older bush trees. All the seedlings produced during the last few years, however, are being grown on their own roots, planted closely and given a minimum of pruning.

Up to the present only about 30 of these seedlings have fruited ; but a number of these fruited for the first time this year, and probably quite a large number will now be coming into bearing in each succeeding year. Many of the fruits, as is only to be expected, seem to be quite worthless, and none of outstanding merit have yet appeared, though two or three may be worth propagating for a more extensive trial. Descriptions of the fruit of each seedling are being kept, in addition to notes on the trees themselves.

In the last few years one or two of the bearing trees have been crossed back with one or both of their parents, and a second generation of seedlings is now being raised. In some cases they have been self-pollinated,but usually no seed has been produced by this method.

PEARS.—About 150 seedling pears are now being grown. They are all the result of crosses, and there are three fairly large families and two small ones. All the trees are growing on their own roots, and none have fruited yet, the oldest of them having now made five years' growth from the seed.

PLUMS.—The number of plum seedlings now growing is about 150. Attempts to increase the size of a few families of crosses are still being made, but the numbers are only increasing slowly as the successful fertilization of a plum blossom produces only one seed, and the number of seedlings finally raised is often small compared with the number of blossoms pollinated. With the exception of a few of the earliest seedlings produced, which have been worked on stocks, all the plums are growing on their own roots. None of them have fruited yet. All these plum seedlings are the result of crosses or of self-fertilizations.

BLACK CURRANTS.—The earlier selected black currants have been propagated in order to test the cropping of a number of bushes of each seedling variety, but the bushes are not yet bearing. The plantation of 1,300 seedlings produced by various crosses between five well-known types of black currant, has now cropped for two years. Observations on all the bushes and selections of promising ones have been carried out during the last two years, and will be continued next year. It has been easy to select a number of good bushes, but none of outstanding merit have been found. Probably it will be necessary to propagate and test on a fairly large scale quite a large number of these seedlings, say about 30, in order to find out with certainty which are the best.

The only production of new seedlings during the last few years has been from a cross between the variety Baldwin and one of the Boskoop group. The seedlings are at present only one year old from the seed.

GOOSEBERRIES.—No new gooseberry seedlings have been raised for some years past. Approximately 400 are now growing in the plantations, but only about 100 of these have yet begun to crop freely. Notes are being made of the characters of all these bushes, and any of marked promise will be propagated for further trial. So far only one has justified selection.

RASPBERRIES, BLACKBERRIES AND HYBRID RUBI.—Some of the raspberry seedlings which in former years appeared very promising have been rather disappointing. They have not been grown hitherto in large numbers or under very good conditions, owing to lack of available land; but now a few of the best have been included in a fairly large-scale trial of commercial varieties, and a truer idea of their value should soon be obtained.

A few crosses between some of the most successful varieties of raspberries have recently been made, but none of the seedlings have fruited yet.

Very many raspberry seedlings have been discarded as useless, and this has also been done with many selfs and inter-species crosses of raspberries, loganberries, blackberries, etc., as very few were of any value. One cross, however, between the Himalaya Berry and an autumn-fruiting raspberry, has produced some interesting results. Two first generation hybrid plants were obtained. and from open-pollinated and selfed seed of these a number of second generation seedlings have been grown. These vary a great deal in character, and many of them are useless, though interesting; but a few bear good crops of fruit of distinctive character. The flavour is not particularly good, and the berries often will not part cleanly from the stem, so that these types in their present form do not appear to be of much commercial value. But they appear well worth further investigation, and accordingly have been re-crossed with raspberries, loganberries and blackberries in the hope that some better new form of berry will be produced. This last generation of seedlings has not yet reached the fruiting stage.

A few seedling loganberries, which may possibly be an improvement on the usual type, are being propagated for further trial.

The seed of some selected wild blackberries has produced some very good plants. Each of the wild varieties seems to have bred very nearly, if not quite, true. A few plants which appear to be slightly better than the rest have been selected for propagation, so that true clones will be available for trial. These varieties of blackberries bear heavy crops of large, attractive, good-flavoured berries which ripen considerably earlier than most wild varieties; they therefore seem likely to have some commercial value.

STRAWBERRIES.—Since the publication in the 1923 Report of the Notes on Strawberry Breeding, few new seedlings have been raised.

The new seedlings are mainly the result of the repetition of crosses which had been found to produce a large proportion of good seedlings, though only small families had previously been raised. A few F_2 families have also been obtained by selfing selected seedlings. A family of seedlings from the cross King George × Grove End Scarlet has been raised in the endeavour to produce a good jamming berry. Most of these new seedlings have not yet fruited, and those which have fruited do not include anything of special interest.

Seedlings raised in former years and fruiting for the first, second or third time have been the subject of observation and selection. Other seedlings previously selected and propagated have undergone a further process of elimination, many being discarded, while others have been selected for further trial. About 100 seedling varieties which have been propagated are still under trial, though the majority of these have only reached the stage where there are five plants of each variety ; but others are being tried in twenties and hundreds. These selected varieties include plants of all seasons, and kinds thought to be suitable for jam are included as well as dessert varieties.

STUDIES IN THE ROOT AND SHOOT GROWTH OF THE STRAWBERRY IN SEASON 1924-25.

E. Ball and C. E. T. Mann.

I. INTRODUCTION.

Of late Strawberry troubles have come into prominence, and very little is known of the causes lying behind the production of abnormal Strawberry plants. When the present series of investigations was commenced, a large number of abnormal forms of the plant were ascribed to an eelworm (*Aphelenchus fragariæ*) (See Ballard and Peren).* Further work was needed to confirm these conclusions, and in addition other forms of diseased or abnormal plants were observed in the field which showed none of the symptoms regarded as being due to the presence of *Aphelenchus fragariæ*. In July 1924 certain plants at Long Ashton were noticed to wilt rapidly and later the foliage became brown and died. On examining some of these plants certain brown patches could be seen on the roots, and there seemed the possibility that some fungus was the cause of the condition. The questions naturally followed as to how much root a Strawberry plant of a given age should have, whether any of the roots died annually, and if so how many, and at what season were new ones produced. In addition some information was required about the point of origin of the new roots. On examining several three-year-old plants in the field, it was noticeable that the vigour of the plant was often associated with the degree of contact between the crowns and the soil. Plants, the crowns of which were not in contact with the soil, were generally much inferior in vigour to those which had soil well up to the level of the new crowns.

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* Ballard, E. and Peren, G. S. " Red Plant in Strawberries and its correlaation with Cauliflower Disease."
Journ. Pomol. and Horti. Sec. 3. 142-147, 1922.

Besides the value of a knowledge of the normal annual cycle of root and shoot growth of the Strawberry to the investigator of pathological conditions, it should be of some service to the grower himself in connection with manurial and cultivation practices. For these reasons the investigation of the growth of the root and shoot of the normal Strawberry plant, and of some of the factors likely to influence the normal cycle, was commenced by the writers in the autumn of 1924. In presenting an account of the work done in the season 1924-25, they do not wish the reader to infer that they would suppose that exactly the same results would be obtained in another locality or in another season, in which the general meteorological conditions were very dissimilar to those of 1924-25. This account only purports to be a progress report, but it is thought that the results so far obtained are of sufficient value to merit immediate publication. The work will be continued for several seasons, in which more than one series of plants will be examined throughout three growing seasons—the usual length of life of a Strawberry plantation. This will give the opportunity of confirming the results of one season by those of another and at the same time ascertaining something of the seasonal effect. In addition the results will be checked by observations on plants growing under conditions of soil and climate different from those prevailing at Long Ashton.

II. GENERAL PLAN OF INVESTIGATION.

(1) The desirability of a more precise knowledge of the behaviour of the strawberry plant, both above and below ground, has already been emphasised. The first portion of this investigation therefore consists in tracing the life history of the cultivated strawberry from the date of planting the runner through three consecutive seasons. An attempt will be made to correlate definite features in the normal, annual sequence of the development of the plant with the meteorological factors of rainfall, sunlight and soil temperature.

(2) The second portion of this investigation is designed with the object of discovering the effects of certain factors, other than meteorological, on the normal sequence of events. The particular factors to be investigated are the effects on the subsequent development of the plants of :—

- (*a*) Cropping of maiden plants.
- (*b*) Time of planting runners.
- (*c*) Different methods of planting, *e.g.* :—
  - (i) Deep planting.
  - (ii) Shallow planting.
  - (iii) Differing degrees of root trimming previous to planting.
- (*d*) Various methods of cultivation.

(3). Finally, abnormal plants are to be examined with a view to finding whether the observed abnormalities can be attributed to defective root systems.

The plants used throughout the work in Sections I. and II. were obtained from a good strain of the variety Royal Sovereign, except in certain instances which will be indicated as they arise.

III. METHODS.

The methods employed in this investigation have already been fully described in the Journal of Pomology, and therefore only a brief outline is given here.

Approximately fifteen hundred runners provided the necessary material for the experiments, and as far as possible Royal Sovereign was the variety employed.

1. In following the normal development batches of ten plants were carefully lifted and washed at intervals of from three to six weeks from the date of planting, September 2nd, 1924, till September 16th, 1925. The necessary observations on root and shoot growth were made, and quantitative data were also obtained on the weights of roots and crowns.

2. (*a*) The deblossoming effect was studied on about 200 of the plants set out on September 2nd, the deblossoming operation being performed in May.

(*b*) Following the general planting on September 2nd, a batch of 100 runners of the variety Sir Joseph Paxton was planted on October 20th, 1924, and a similar number of Royal Sovereign runners was planted on April 7th, 1925. These plants were used in studying the effect of the time of planting, and were compared with the normal Series I.

PLATE I.

TIME AND METHODS OF PLANTING.

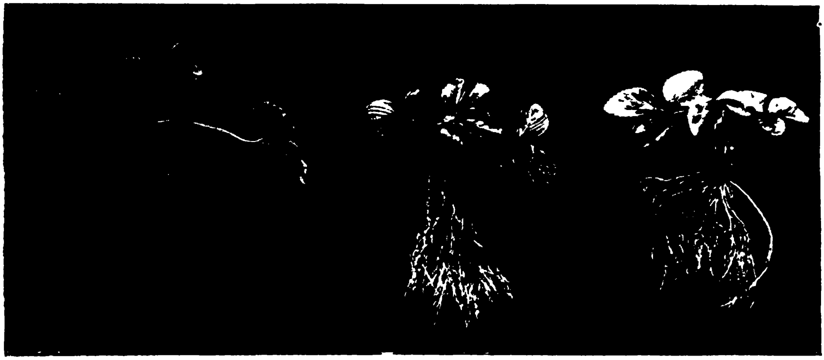

FIG. 1. Normal. Shallow planted. Roots trimmed.
Planted September 2nd, 1924. Condition on October 13th, 1924.

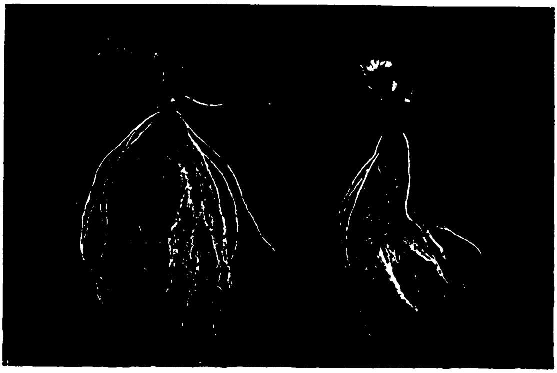

FIG. 2. Planted—September 2nd, October 20th.
Condition on January 11th, 1925.

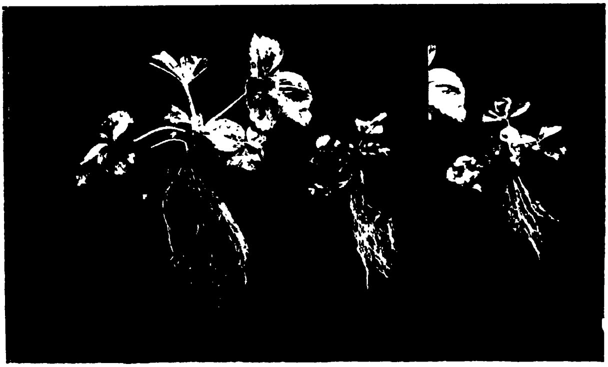

FIG. 3. Planted—Sept. 2nd, 1924. Oct. 20th, 1924. April 7th, 1925.
Condition on May 11th, 1925.

PLATE II.

METHODS OF PLANTING

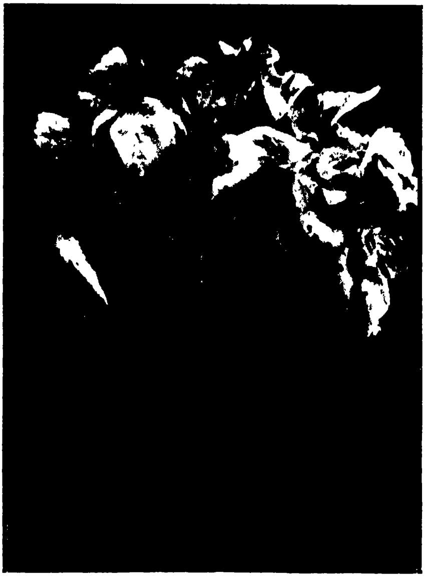

FIG. 1. Normal.

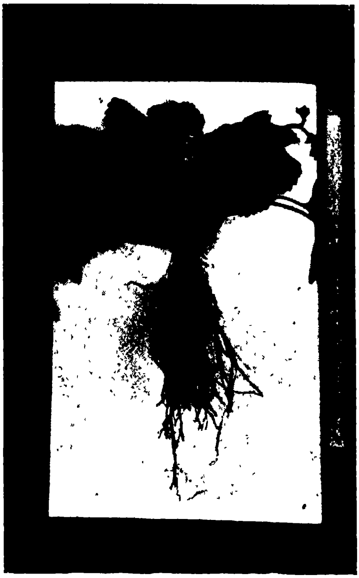

FIG. 2. Deep planted.

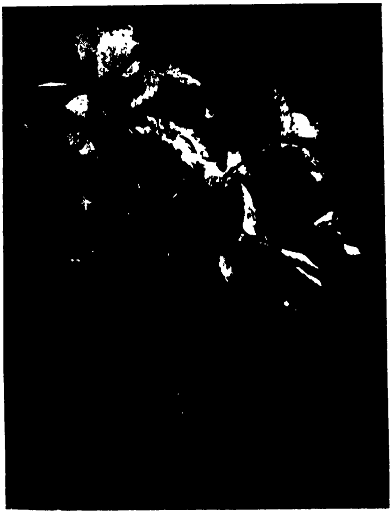

FIG. 3. Shallow planted.

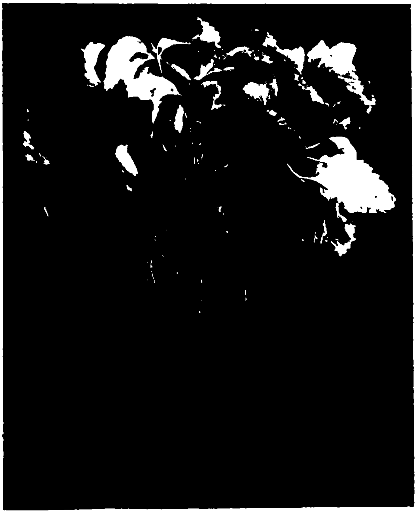

FIG. 4. Roots trimmed.

All the above plants planted September 2nd, 1924.
Condition on September 16th, 1925.

PLATE III.

EFFECT OF CROWN DAMAGE.

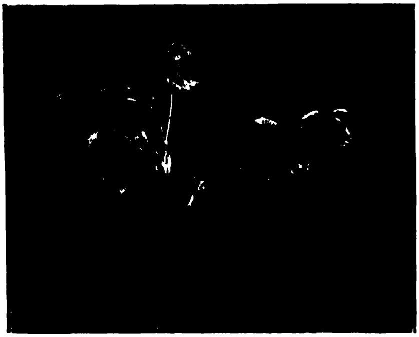

FIG. 1. Main crown cut off.
Condition of plants in the Spring.

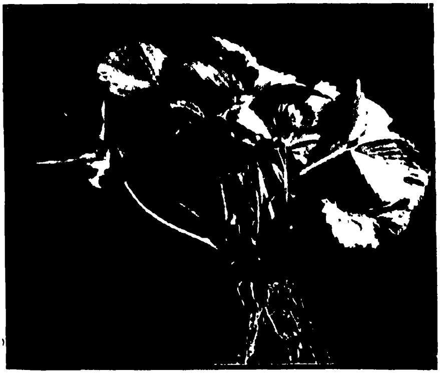

FIG. 2. Later stage of fig. 1 above.

1. 2. 3.

FIG. 3. 1, Normal leaf.
2, 3 & 4, Leaves from damaged plant.

(*c*) It had already been noted that plants with the crowns in poor contact with the soil were generally weak and unhealthy in appearance. It seemed, therefore, that the depth of planting might materially affect the development of the plant. To test this point batches of fifty runners were planted in September, 1924, as follows:—

- (i) Normal depth, *i.e.*, with the soil up to the level of the leaf bases so that approximately half the rhizome was below ground.
- (ii) Deep planting where only the leaves were above ground level.
- (iii) Shallow planting, so that the soil barely covered the roots, and the major portion of the rhizome was above soil level.
- (iv) Approximately one-half of the runner roots was removed, transversely from a fourth batch and the root trimmed plants set out at normal depth.

(*d*) In cultivation of the experimental plots normal clean culture was followed as far as possible, but the effects of hoeing the soil away from the plants and, alternatively, of slight earthing up during hoeing have been observed on about fifty plants.

3. (*a*) Examinations of abnormal plants have been carried out as occasion demanded during the season, the plants under consideration being carefully lifted and washed in the manner previously described. In addition, observations have been made on many abnormal plants allowed to remain *in situ* during the season, with a view to finding whether any such plants regain a normal condition.

(*b*) In this connection also experiments have been performed to ascertain the effect of damage to the main crown on the future development of the plant.

IV. RESULTS FOR SEASON 1924-25.*

1 *The Normal Development of the Strawberry from September 2nd, 1924, to September 16th, 1925.*

The effect of transplanting from the runner bed to the permanent quarters was to cause the death of the lateral roots and of the tips of the main runner roots. Very active root growth commenced soon after planting and continued until about the middle of December. The shoot growth was by no means proportional to the root growth made in this period.

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* The results obtained in the "normal" series (1), the deblossomed series (2) (*a*). and the Spring planted series (2) (*b*) (i), are briefly recapitulated here in order that the results of special treatments described later may be readily compared and their significance appreciated.

A full account of this portion of the work will be found in the Journal of Pomology and Horti. Sci. Vol. V., No. 3.

A certain amount of root death was observed in December, but was ascribed to seasonal conditions and was not deemed to be of normal occurrence. There was a dormant period which lasted from the middle of December until the beginning of March, when growth of both root and shoot recommenced. In this second phase of growth, which continued until the cropping season was ended, there was a large shoot growth, new leaves expanding, and the flowers developing and the fruit maturing. The root growth was small, consisting mainly in the production of "feeding" roots on the scaffold roots already present, although a few new primary roots were formed. What might be called the third phase of growth commenced after the cropping season, and was still in progress in mid-September. This phase represents vigorous growth of both root and shoot. New crowns were formed, resulting in great increase in the bulk of the plants. Root growth commenced at the end of June, and was at first slow, but became very vigorous by the beginning of August. This root growth consisted in the production of new primary roots and of new lateral roots all over the old root system. These new primary roots had their origin mainly at the bases of the new crowns, and above the point of origin of the older roots. (See Plate I., figs. 1 and 4.)

2. *The effect of special treatments on the development of the plant.*

(*a*) *Deblossoming.*

The effect of not allowing plants to mature a crop of fruit was to increase the vigour of the plant. The deepening in colour of the older roots was delayed. The difference in vigour of root and shoot between the cropped and deblossomed plants, easily observable four weeks after the removal of the flowers, became most marked by July 20th, but was not so noticeable by August 10th. The difference in vigour of the plants subjected to the two treatments was still appreciable in mid-September, greater difference being exhibited by the roots than by the aerial portion of the plants.

(*b*) *Time of planting.*

(i) Spring Planting.—The root growth made up to mid-summer by the runners planted in the Spring consisted mainly of the growth of new feeding roots, although a few new "primary" roots were formed. The commencement of a new phase of root growth was observable by July 20th, when new main roots could be seen which had their origin distinctly above that of the older ones. A considerable growth of both root and shoot had taken place by August 10th. By mid-September as much as half the total bulk of roots consisted of those formed since mid-summer, a proportion greater than that observed for the autumn planted runners. At this date the difference in vigour between the plants set in Autumn and Spring respectively was much less than it had been hitherto, some of the Spring plants being as large as those planted in the Autumn.

(ii) October Planting.—Runners of the variety Sir Joseph Paxton were planted on October 20th, and Plate I fig. 2, which was taken on Jan. 12th, 1925, gives the comparison between a plant set on October 20th with one planted on September 2nd. The great difference in vigour in favour of the September plant is very clear. In Plate I, fig. 3, the condition of a September plant on May 11th, 1925, is compared with that of an October plant and another planted in the Spring. It will be seen that late Autumn planting was in no way more advantageous than Spring-planting, and that both resulted by the following Summer in plants decidedly less vigorous than those planted in the early Autumn.

(*c*) *Methods of Planting.*

(i) *Deep planted.*

October 16*th*, 1924. The new main roots were rather fewer in number, but just as many lateral roots were being produced on the original runner roots as in the normal plants. The amount of dead roots was noticeable, but on the whole the root system was not much inferior to that of plants which had been planted at the normal depth.

November 19*th*, 1924. The observations were of a similar nature to, and confirmed those made on October 16th.

September 16*th*, 1925 (Plate II. fig. 2). Neither root system nor shoot was inferior to that of the normal plants. The rhizome or underground portion was very long, and consequently the point of origin of the new roots appeared to be about two inches above the old ones, as compared with one inch on the normal plants. This point is illustrated by Plate II., fig. 2. It must be stated that the plant illustrated was not absolutely typical of all deeply planted plants : it was selected as it showed well the increased length of the crown, and a portion of the root system had been removed before photographing. An average plant would have had a better root system but just as long a crown.

(ii) *Shallow Planted.*

October 16th, 1924 (Plate I., fig. 1). The original primary roots were noticeably well furnished with laterals ; in fact they compared favourably with the normal plants in this respect. The new primary roots were fewer in number than on the normal plants, and had their origin at the same nodes as the older roots and not higher up. Many of these new primary roots had not developed properly, their growth having been arrested before they reached the moist environment of the soil. The effect of shallow planting would probably have been greater in a drier season, but the result was not very serious at this date on the plants examined.

November 19th, 1924. New primary roots which had developed were only at the same stage as were those of the normal plants on October 16th, in that they were as yet not well furnished with laterals. It was noticed that the exposed portion of the new primary roots was coloured with a red pigment.

September 16th, 1925 (Plate II., fig. 3). As a result of cultivation the position of the main crown in relation to the soil was not well maintained, and consequently the difference in vigour between the shallow planted and normal plants was not great at this date. But on the whole the root system was not so vigorous as that of a plant set at the normal depth. When it happened that the new roots had their origin at some distance from the soil level (this frequently occurred on one side of the plant only), it was noticed that they were red in colour and that the tips had died.

(iii) *Roots Trimmed.*

October 16th, 1924. Lateral roots were abundantly produced near the region of the cut ends of the runner roots. This is well illustrated in Plate I., fig. 1. The new primary roots seemed to be more abundant than on the normal plants, and to have their origin mostly above the old roots. In addition, they were stronger and better furnished with laterals, and in some cases were longer than the old primary roots of a normal plant, the length of the longest being 16 cm. The bulk of the root system of one of these plants was equal to, if not greater than, that of a normal plant whose crown was of the same size—hence the volume of new roots was greater, the increase being both in laterals on the cut runner roots and in new primaries with their laterals.

November 19th. Root growth was still obvious.

September 16th, 1925. At this date the plants were in no way superior in vigour to those the roots of which had not been trimmed.

The vigorous roots which had been produced at the cut ends of the runner roots were still well furnished with living laterals. The difference in appearance of the root system from that of a normal plant is well seen by comparing Plate II., fig. 4, with Plate II., fig. 1, the former being, as it were, hollow in the centre.

3. *The Examination of the Root Systems of Various Forms of Abnormal Plants.*

a. The root systems of abnormal or unhealthy forms of plants, growing both in pots and in the field, were examined in order to ascertain whether the abnormality was due to a defective root system.

In the Field. In early August were examined several plants of an unhealthy appearance, *i.e.*, those with small deformed young leaves or of poor vigour generally. The conclusion drawn was that the result was not due to the death of, or damage to, an appreciable proportion of the roots. As a rule the root system was healthy, but always proportional in amount to the aerial portion of the plant, hence the condition of the plants was not due to death of the roots, but to some factor either preventing new root formation, or preventing the formation of an efficient leaf area. The condition of the plants whose crowns were not in good enough contact with the soil was probably due to the former factor.

Potted Plants Growing in Soil. Early in August some plants were selected which had small deformed and yellowish leaves with short petioles, and at the same time a similar number of healthy plants were chosen. These were turned out of their pots and the root systems examined. In both cases the majority of the roots were found to seek the edge of pot and the neighbourhood of the crocks at the bottom. The root systems of the pot plants were distinct from those of plants grown in the field in that the length of the main roots was much greater and the amount of fibrous root much larger.

The healthy plants showed production of new primary roots and little root death, whereas the others showed rather more root death and no new growth of primary root. This might be the result of either defective root system or defective shoot growth. The writers incline to the view that it was due to the latter cause, after considering the evidence afforded by the plants growing in the field.

b. The Effect of Damage to Strawberry Crowns.

In the course of making observations on Strawberry plants, it was noticed in the Spring that certain plants occurred which had a distinctive type of abnormal foliage (Plate III., fig. 1). The leaves were smaller than usual, of a thinner texture than normal leaves, and the petiole was longer and thinner in proportion to the leaflets than was usually the case. In addition the leaf blades were of an abnormal shape, and the serrations were fewer than usual. Some of these plants were carefully dug up and examined, and it was found that the main crown had been severed and that several weak buds beneath the cut had broken, giving weak lateral crowns with the type of foliage described above. This condition seems to be analogous with " temporary reversion " in the black currant. The latter condition is produced by cutting a bush back hard and causing weak basal buds to break. These produce shoots bearing an abnormal type of leaf, very similar to the reverted leaf. The condition of the Strawberry plants above described was in all probability due to hoe damage, in which the top of the crown had been completely severed. In order to confirm this view the crowns of a number of plants were cut at ground level. A condition identical with that described above was produced, as can be seen by Plate III., fig. 3. Observations were made on those plants throughout the season, and it was noticed that eventually a very dense kind of plant was produced, having leaves of the normal shape and size (Plate III., fig. 2). This was due to the growth of a relatively large number of crowns very close to one another.

V. DISCUSSION.

Methods of Planting.

The effect of deep planting was to cause a certain amount of root death, but the ultimate vigour of the plants was not much impaired. The increase in length of the main crown as compared with that of plants set at the normal depth was noticeable. The effect of shallow planting was more detrimental, resulting in the death of some of the new primary roots, which were unable to reach the moist soil before succumbing to drought. The trimming of the runner roots before planting did not impair or enhance the ultimate vigour of the plants. The treatment resulted in the copious production of lateral roots near the cut ends of the main runner roots, and six weeks after planting the bulk of the roots was the same as that of a normal plant, hence the growth of new roots had been greater.

Observations on Abnormality.

A number of abnormal plants growing both in pots and in the field were examined to ascertain whether the abnormal (defective) shoot growth was due to death of, or damage to, a portion of the root system. The conclusion drawn was that damage to the root system was not responsible for the condition of the plant, except in cases where the crowns were badly exposed, leading to the desiccation of the young roots. On the plants examined the root systems were usually healthy, but always in proportion to the aerial portion of the plant.

VI. POSSIBLE PRACTICAL APPLICATION OF THE RESULTS OBTAINED.

The observations which have been made on the season of root growth and on the point of origin of the new main roots would seem to indicate at least the time of the year at which root growth might be assisted, or at any rate not hindered. The most vigorous growth of new roots has been seen to have commenced by the beginning of August, that is to say, by about one month after cropping. This points to the value of cleaning the strawberry rows as soon as possible after cropping, in order not to cause disturbance of the new root growth. Severe exposure of the crown should at all times be avoided, since it is bound to be prejudicial to root growth, the new roots having been seen to have their origin markedly above that of the older ones. Conversely, it seems likely that root growth might be assisted by a slight moulding up of the plants after cropping—however, no recommendations will be made on this point until it has been tested out in the field. Observations made in the field confirm this view of the value of close proximity between soil and crown, plants with exposed crowns being poor in vigour and often having undersized leaves. This has long been recognised, but is often forgotten. In 1881 Thompson* writing on strawberry cultivation in "The Gardener's Assistant," states that "If the stem of any strong growing sort be taken and the lower leaves stripped off, it will be seen that there are a number of white points ready to push, if circumstances should be favourable for their doing so. They do not push through the coatings formed by the bases of the leaves above ground, but if the stem is buried in soil, or in a good top-dressing of rotten dung, leaf mould, or even leaves, they will strike root, in consequence of which the plants will be greatly invigorated . . . ." Our own observations fully confirm this. In addition, the possible beneficial action of an application of some fertiliser after cropping is to be tested.

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* Thompson, Robert. "The Gardener's Assistant." London. Blackie and Son, 1881.

A NOTE ON STRAWBERRY "STRAINS."

By E. Ball.

One of the points usually insisted on in books or articles on Strawberry growing is that the grower should first of all obtain runners of a good "stock" or "strain" of plants. By this is usually meant a stock of plants which is vigorous, crops well and is true to name. The question which naturally arises is: What is meant fundamentally by the word "strain" when applied to such a plant as the Strawberry which is always propagated by asexual methods, except in the raising of new varieties? (Alpine varieties are not being considered in this article). It is quite a different matter when the term is applied to a number of poultry or peas, which are always increased by sexual methods. Here, division and mingling of the chromosomes of two parents takes place, and there is the opportunity for some rearrangement of inherited characters. Johannsen demonstrated the existence of "pure lines" in beans, and that it was not possible to pass from one "pure line" to another by mere selection, but that the weight of the seeds could be increased by selection, if a number of "pure lines" were present, by the gradual elimination of the lower yielding "pure lines." However, when dealing with the Strawberry there can be no possibility of a collection of "pure lines," the wider meaning of the phrase suggested by Morgan* being used here, unless the occurrence of "bud-sporting" is admitted. In this case it is necessary to assume that in the production of runners from the parent plant, some slight change in the arrangement of the genes, or, as it were, compartments of the chromosomes sometimes takes place—making no difference in the outward appearance of the plant, except perhaps in its vigour, but resulting in a very different yield of fruit. If this is not the true explanation of the difference in yield obtained from various "strains" of Strawberry grown under the same conditions of cultivation, etc., there are at least three other possible explanations. First, it may be simply a question of the vigour of the runner which is put into the ground, *e.g.*, the big runner producing the big plant, in virtue of its better start in life. Secondly, it may be a question of health, the lower yielding "strains" having a higher proportion of plants infected with some disease. A third cause of the difference in yield might be the admixture of "rogues" with the true stock, which would result in a smaller crop owing to their smaller cropping capacity, or complete "blindness" or absence of blossom. In order to find out which of these factors is responsible for the difference in yield of various "strains," and to what extent, a number of experiments have been started at Long Ashton. Some results have already been obtained, but the complete story is not yet unfolded, and hence this article only purports to be a progress report.

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* The Physical basis of Heredity. T. H. Morgan, 1919.

In 1923 two experiments were started by Mr. G. S. Peren at this Station. In the first a number of "strains" (six) of the variety "Royal Sovereign" were obtained from the Cheddar Valley District, and planted side by side at Long Ashton, with the intention of taking crop weights from them over a number of generations. The Cheddar Valley Strawberry growing district is small in area, but the soil variation is considerable and, as elsewhere, all the growers do not give the plants identical treatment. Thus, it should be possible, from this material to ascertain whether after a number of generations, these strains which were once growing under different conditions and receiving different treatment, would eventually yield even crops when grown side by side under exactly the same conditions. Should this be the case, difference between one "strain" and another in this instance is merely a question of environment and size of the runner. By environment is meant the climate, soil conditions, and the treatment given to the plants. Two crop weights have been obtained from the first generation of plants, which were allowed to crop in their first season, since they were planted in early September. From these figures a base line is obtained, *i.e.*, the variation in yield of the different strains at the commencement of the experiment is known. These figures show that the best strain crops just about half as heavily again as does the poorest. The difference in vigour of the plants as seen in the field is very marked, those of one strain being at least half as large again as those of another. In September, 1924, a second generation of plants was planted out and the first crop weights were obtained from these this year, and showed considerable variation. A third generation has been planted in August of this year (1925).

The second experiment was designed to determine the effect of the selection of parent and of runner on the yield obtained. In the first stage selection of runner only was considered, as follows :—

(1) best runners. } from parents layered to three plants each.
(2) all runners. }
(3) poorest runners }
(4) All runners from parents allowed to make unlimited runners.

Thus runners were selected (*a*) by grading and (*b*) by restricting the number made by the parent plant.

From these plants crop weights from two year old plants are available. The difference between the weights obtained from 1, 2 and 3 are small and well within the limits of experimental error, but the weight obtained from 4 is very much below that from the three other stocks, the ratio being 1 : 3. The difference in the vigour of the plants 1, 2 and 3, as compared with 4, is very marked, and it is interesting to note that the smaller plants of 4 cropped earlier than did those of 1, 2 and 3, the first two pickings being markedly heavier from 4 (more than twice as heavy). This is almost certainly due to the more dense foliage of the larger plants retarding the ripening of the "berries." The lack of difference in cropping between 1, 2 and 3 is probably due to the severe restriction of the runners, which were limited to three, thus producing a vigorous stock not exhibiting very great range in size. In a further stage of this experiment, for which runners were planted in September, 1924, another factor was introduced, viz., the selection of parent. However, it is not advisable to draw any conclusions from the result of this operation until the crop weights have been obtained from two year old plants.

In addition to the experiments just described further work is in hand on the subject of strawberry "strains." A second selection experiment will be commenced this coming season designed to estimate the effect of the following factors on the ultimate yield obtained :—

(1) Selection of parent.
(2) Selection of runner—
  (*a*) by limitation of the number formed.
  (*b*) by eliminating a certain percentage at the time of raising from the runner bed.

In this case the factors, (1) selection of parent and (2) selection of runner, will be kept quite separate. The original parents were planted in September, 1925.

Close observations have been made in the field on a number of plants of the varieties "Royal Sovereign" and "Stirling Castle," and plants exhibiting certain characters have been isolated and the runners from each kept separate, *i.e.* "clones" have been formed and in effect constitute a number of pedigree Strawberry plants, since the history of the parent of each is known. The parents have been selected as exhibiting the following characters :—

(1) Differences in vigour and habit.
(2) "Blindness" or absence of blossom.
(3) Difference in proportion of blossom to foliage.
(4) Abnormal types of foliage.

In addition, the vigour of each runner was noted at the time of planting. From this work it should be possible to ascertain to what extent any of these characters are inherited.

At the commencement of this paper four possible causes were suggested as the explanation of the different cropping powers of various " strains " of Strawberries.

(A) The existence of " pure lines."
(B) Simple differences in vigour due to environment.
(C) Health of the plants.
(D) The presence of a large proportion of " Rogues."

Any or all of these causes might operate at once in producing a poor strain.

If (A) is one of the causes, the selection of parents should bring about an increased yield, since it would be possible to increase the proportion of the heavier cropping " pure lines."

If (B), restriction of the number of runners and better treatment of the plants should rapidly raise the yield.

If (C), the strain would probably be improved by eliminating all abnormal or diseased parents from the runner bed. There is evidence that, at any rate, some abnormal types of foliage may be inherited in the runner.

If (D), careful rogueing should raise the yield. This factor often operates to lower the yield of Strawberry fields. This is especially so with the variety " Stirling Castle " in some fields of which a large percentage of " rogues " can be seen. They are sometimes " blind " or totally devoid of blossom, and produce runners in immense numbers, and consequently soon spread over the field, or, if present in the runner bed, rapidly lead to the deterioration of the " strain." These plants are easily recognised, since the foliage is quite distinct from that of the true " Stirling Castle, " the leaflets being of a bluish green colour and incurved, and if any flowers are present they are much larger, and consequently more conspicuous than are those of the " Stirling Castle." " Rogues " are also found among other varieties, *e.g.*, " Sir Joseph Paxton," especially in the Wisbech district. This cause of poor yields is, however, easily remedied, at any rate in the case of " Stirling Castle," by careful rogueing of the runner beds.

In conclusion, the following points of practical application which arise out of this brief discussion may be stressed :—

(1) The value of obtaining runners of good quality when buying.

(2) When propagating eliminate all " rogues " and diseased plants from the runner bed.

(3) Some restriction of the number of runners allowed should be made, either by hand layering, or, if this is not possible and the plants are allowed to make unlimited runners, then only the strongest of these should be planted. One of the experiments described above has demonstrated how very rapidly the yield may be lowered by the taking of unlimited runners and making no selection.

(4) There is not yet sufficient evidence to indicate whether great advantages would accrue from the selection of parents in the runner bed, other than by the elimination of diseased plants and plants not true to name.

(5) Finally it follows that runners should only be obtained from a special bed of maiden plants which can be carefully selected and rogued for diseased plants, or plants not true to name.

INVESTIGATIONS ON CHLOROSIS OF FRUIT TREES—I.

By T. Wallace and C. E. T. Mann.

THE COMPOSITION OF APPLE LEAVES IN CASES OF LIME-INDUCED CHLOROSIS.

INTRODUCTION.

The investigations on the chlorosis of fruit trees which are being carried out by the writers, have been undertaken as a section of their studies on the wider problem of " The Nutrition of Fruit Trees."

The scope of the investigations is limited to the study of so-called accidental chlorosis—that is, to chlorosis in trees which normally are not chlorotic in which the chlorotic condition is the result of environmental factors such as particular soil conditions.

The work up to the present has proceeded along three main lines, viz.:—

1. The occurrence of chlorosis in relation to soil conditions.
2. Chemical investigations on the foliage of chlorotic trees.
3. Experiments with a view to the control of the condition in the field.

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In this communication it is proposed to present certain results which have been obtained in 2.

The results of our investigations under 1 and 3 will be dealt with fully in later papers, as although some very definite progress has been made to date, further data are required to permit of definite conclusions being drawn.

In presenting the results obtained on the composition of apple foliage in the present paper, it will first be necessary to present certain soil data, and to refer to certain experimental treatments in order to show clearly the conditions with which chlorosis was associated in the particular cases under consideration, and to indicate the treatments by which green foliage was produced in other cases on trees which had previously been chlorotic.

The foliage which has been examined has been obtained from apple trees growing at five different centres. These centres were selected from a fairly large number which have been under observation, as providing suitable material for the work.

SOILS OF THE CHLOROSIS CENTRES.

In Table I. are given details relating to the Geological Formations from which the soils are derived, and to the amounts of carbonates—calcium carbonate, except at Centre A.—contained in the soils at various depths.

TABLE I.

SOIL DATA FROM CHLOROSIS CENTRES.

Centre.	Surface or Subsoil etc.	Geological Formation.	Total Carbonates in air-dried soil (reckoned as $CaCO_3$) %
A.	Surface	Dolomitic Conglomerate	25.33
B.	Surface	Keuper Marl	11.86
	Subsoil	,, ,,	19.92
	18ins. to 30ins.	,, ,,	19.58
B.	Surface	Keuper Marl	6.08
	Subsoil	,, ,,	3.77
C.	Surface	Lower Lias	14.85
	Subsoil	,, ,,	9.92
D.	Surface	Chalk	69.0
E.	Surface	Inferior Oolite	18.40

It will be noted in the Table that all the soils contain high percentages of carbonates, which is the soil feature usually associated with chlorosis—though other soil features are found to be associated with the condition (4, 5), and so far as we are aware, by far the most common feature associated with chlorosis of trees in this country. Indeed, our soil investigations have led us to the conclusion that there is a large element of risk attaching to the planting of fruit trees on either chalk or limestone formations in this country, as although the quality of the fruit from such plantations is almost invariably excellent, the trees generally succumb prematurely to chlorosis, and in certain cases fail entirely to become established. At the centres considered in this paper, the trees have failed conspicuously, and it has been obvious that the soil conditions are quite unsuited for the growing of trees under the cultural methods usually followed in fruit plantations.

From certain results which we have obtained in our experimental treatments of the trees, it appears that it will be possible to grow trees free from chlorosis on certain of these soils by the use of special methods.

The following notes are included to supplement the data presented in Table I.

Centre A.—The Geological Formation from which this soil is derived is not generally utilised for commercial fruit growing. The formation is fairly extensively developed in Somerset, and the soil generally exerts a marked toxic action on trees which invariably show symptoms of chlorosis. Cases of chlorosis on this formation have been discussed in a previous paper by one of us. (6).

The underlying rock at this centre is Dolomitic in character, and the soil is generally shallow and stony, the stones consisting of pieces of Dolomitic limestone. The surface soil sample taken for analysis contained 34.6% of these stones.

Centre B. The soil at this centre varies greatly over quite small areas in the amount of carbonate found, as the carbonate is derived from small bands of limestone known locally as "skerry." It was shown by sampling, that only the trees in the vicinity of these outcrops developed chlorosis. Thus, in certain areas of the plantations the carbonate content in successive 9in. samples from the surface down to 27ins. was of the order of 0.1%, whilst at the points near the outcrop the amounts shown in the table were found. Up to the time when the plantations were first visited, on the former of these areas, and on the area for which the data are presented in Table I, in which the carbonate content of the surface soil was 6.08%, the trees had made excellent growth, and were entirely free from chlorosis. During the same period, the trees on the area showing 11.86% of carbonate in the surface soil were extremely chlorotic, and had failed to make healthy growth.

Centre C. The carbonate content of the soil at this centre is variable in patches, depending on the proximity to the surface of bands of lias limestone which underlie the clay soil. In addition to the naturally occurring carbonate, the amount in the surface soil has been considerably augmented by the application of dressings of lime.

Centre D. This soil is a thin bare chalk soil, the underlying chalk rock often occurring at a depth of 9ins.

Centre E. The soil is a typical brashy oolite soil, containing a large percentage of oolite " stones " and having the underlying limestone rock at depths varying from a few inches.

The data provided in Table I, together with the foregoing notes will suffice to show that the cases of chlorosis considered are typical cases of so-called lime-induced chlorosis, in which the occurrence of the chlorotic condition is associated with high contents of carbonates in the soil.

CHEMICAL DATA ON THE FOLIAGE.

The analytical data obtained on the foliage are reported in Table II, and the following notes on the samples are added in elaboration of these to show the sources of, and the particular circumstances under which the samples were collected.

TABLE II.

RESULTS OF ANALYSIS OF LEAF SAMPLES OF APPLE FROM CHLOROSIS CENTRES.

Sample No. Variety. Condition of leaves Date of taking samples.	A. Wellington. Green 27/7/23	A.1. Wellington Chlorotic 27/7/23	A.2. Wellington Green 9/7/25	A.3. Wellington Chlorotic 9/7/25	A.4. Wellington Green 4/9/25	A.5. Wellington Chlorotic 4/9/25	B. Lane's Prince Albert Green 24/7/24	B.1. Lane's Prince Albert Chlorotic 24/7/24
	%	%	%	%	%	%	%	%
Dry Matter	—	—	34.59	29.65	37.43	32.94	—	—
Ash in Dry Matter ..	9.47	12.60	10.87	11.69	9.74	9.12	9.76	13.40
Fe_2O_3 in ash	—	—	1.17	0.62	0.33	0.12	0.34	0.59
Al_2O_3 ,, ...	—	—	1.22	1.39	0.05	0.34	—	—
CaO ,, ...	31.60	20.42	35.51	22.54	28.65	16.27	30.72	13.27
MgO ,, ...	3.89	4.48	7.00	5.95	5.15	4.45	6.59	5.97
K_2O	30.02	32.57	17.57	28.12	19.64	39.26	16.32	39.11
Na_2O	—	—	—	—	9.29	13.35	—	—
SiO_2	0.29	0.32	0.98	2.60	2.71	4.61	—	—
P_2O_5 ,, ...	3.57	4.49	3.57	3.76	2.17	3.72	4.99	4.67

Sample No.	B.2.	B.3.	B.4.	B.5.	C.	C.1	C.2.	C.3.
Variety.	Lane's Prince Albert	Lane's Prince Albert	Lord Grosvenor	Lord Grosvenor	Monarch	Monarch	Monarch	Monarch
Condition of leaves.	Green (Shoot leaves)	Green (Spur leaves)	Green	Chlorotic	Green	Chlorotic	Green	Chlorotic
Date of taking samples.	22/9/25	22/9/25	22/9/25	22/9/25	13/6/25	13/6/25	4/9/25	4/9/25
	%	%	%	%	%	%	%	%
Dry Matter	38.46	39.60	39.09	31.71	31.92	23.86	38.18	27.92
Ash in Dry Matter ..	8.62	9.98	9.68	11.59	7.90	9.49	9.18	11.96
Fe_2O_3 in ash	0.15	0.02	0.15	0.26	0.69	0.59	1.07	0.04
Al_2O_3 ,, ...	0.10	0.11	0.29	0.09	—	—	0.09	0.07
CaO ,, ...	29.90	28.50	23.83	14.04	11.92	5.86	22.75	14.53
MgO ,, ...	8.47	7.12	8.99	5.65	5.50	5.25	5.55	5.40
K_2O ,, ...	17.07	11.19	17.14	34.91	28.05	44.66	22.67	40.89
Na_2O ,, ...	22.85	22.42	17.46	20.21	—	—	8.09	12.60
SiO_2 ,, ...	4.66	5.75	2.63	1.59	1.51	2.77	3.21	3.02
P_2O_5 ,, ...	3.55	3.55	3.80	4.95	8.54	9.85	3.02	4.47

Sample No. Variety. Condition of leaves. Date of taking samples	D. Worcester Pearmain Green 6/6/25	D.1. Worcester Pearmain Chlorotic 6/6/25	E. Lane's Prince Albert Green 4/9/25	E.1. Lane's Prince Albert Chlorotic 4/9/25
	%	%	%	%
Dry Matter	32.83	28.46	39.95	38.06
Ash in Dry Matter ..	7.41	10.70	10.72	13.64
Fe_2O_3 in ash	0.64	0.49	0.19	0.14
Al_2O_3 ,, ...	—	—	0.17	0.19
CaO ,, ...	15.40	7.02	32.13	24.98
MgO ,, ...	4.19	6.57	6.25	4.70
K_2O ,, ...	35.24	44.08	14.34	—
Na_2O ,, ...	—	—	9.79	—
SiO_2 ,, ...	2.28	3.17	2.76	3.45
P_2O_5 ,, ...	10.84	9.20	3.91	4.31

SAMPLES A.—A.5.

Samples A.—A.5 were all taken from the same tree, which was growing in a garden under good cultural conditions, and which had received generous manurial treatment. In 1925 it was about 12 years of age, and had shown symptoms of chlorosis for several years. During the seasons of 1923 and 1924, practically the whole of the foliage was markedly chlorotic, and in the latter season the fruits borne had the appearance of wax models and were without any trace of green colour. A portion of the foliage was sprayed with a solution of sulphate of iron in 1924, and the spraying was repeated over the whole of the foliage in June, 1925, following which, it was exceedingly difficult to obtain samples of chlorotic leaves from off the tree on the two dates given in Table II—July 9th and September 4th.

SAMPLES B.—B.5.

Samples B. and B.1 were taken on the same date, the former from healthy trees about 10 years of age growing on an area as shown in Table I, where the surface soil contained 6.08% of carbonate, and the latter from strongly chlorotic trees, 5 years of age, which had failed to make healthy growth, growing on an area as in Table I, where the surface soil contained 11.86% of carbonate.

Samples B.2 and B.3 were taken from the same trees as Sample B.1 during the following season, during which season the trees were subjected to "grassing down" treatment, following which chlorosis was entirely absent, and the trees bore normally green foliage and a medium crop of normal fruits.

Samples B.4 and B.5 were from trees of a different variety, about 10 years of age, growing under the same soil conditions as the B.1 trees, clean cultivation being practised.

The tree from which sample B.4 was taken had been sprayed earlier in the season with sulphate of iron solution which had resulted in the partial disappearance of the chlorotic condition, whilst the tree from which sample B.5 was taken had been left unsprayed and the foliage had remained strongly chlorotic.

SAMPLES C.—C.3.

Samples C.—C.3 were from young 3 year old standards growing in a nursery. Samples C and C.2 were from certain of the trees which had been sprayed with sulphate of iron solution earlier in the season, which treatment had greatly checked the development of chlorosis.

Samples C.1 and C.3 were from control trees which had received no spraying treatment, and which were strongly chlorotic, many being in a crippled condition.

SAMPLES D.—D.1.

The trees from which these samples were taken were about 7 years of age and were growing side by side in the middle of an area on which the majority of the trees were markedly chlorotic, only occasional trees retaining a proportion of green foliage.

SAMPLES E. AND E.1.

The trees from which these samples were taken were 4 years of age. Those bearing chlorotic foliage had been sprayed earlier in the season with a solution of sulphate of aluminium, which treatment had been ineffective in checking the development of chlorosis. Those bearing the green leaves had not received any special treatment.

In the following discussion the data on certain samples will be compared in order to bring out certain differences obtaining in the composition of green and chlorotic foliage.

In the collection and preparation of samples for analysis, every precaution was taken to ensure that the results would allow of comparisons being made. All samples were collected into air-tight tin boxes and were usually in process of analysis within a few hours after picking; where any delay occurred dry matter percentages were not taken. Prior to analysis all petioles were removed, the data thus referring only to the lamina of the leaves.

DISCUSSION.

From the data presented in Table II, the following comparisons of green and chlorotic foliage may be made :—

Samples A. with A.1.; A.2. with A.3.; A.4. with A.5.; B. with B.1.; B.1. with B.2. and B.3.; B.4. with B.5.; C. with C.1.; C.2. with C.3.; D. with D.1.; E. with E.1.

In making these comparisons, attention is drawn to the following :

Samples A.—A.5 allow of comparisons between green and chlorotic leaves growing on the same tree in two different seasons, and on three different occasions.

Samples B. and B.1 provide data for comparison between green and chlorotic leaves from trees of different ages, growing on the same soil, but with the soils containing different amounts of carbonates.

Samples B.1, B.2, and B.3 allow of comparisons between green and chlorotic leaves from the same trees in different seasons, the green leaves having been developed following " grassing down " treatment. B.1 was a composite sample of leaves from shoot and spur growths.

Samples B.4 and B.5 admit of comparison of green and chlorotic leaves from trees of similar age, the green having resulted from sulphate of iron treatment.

Samples C. –C.3 provide data for comparison of green and chlorotic leaves from two batches of trees of similar age on two occasions following the treatment of one batch with sulphate of iron spray, which markedly reduced the amount of chlorosis.

Samples D. and D.1 allow of comparison of green and chlorotic leaves from trees growing under soil conditions which appeared to be strongly conducive to chlorosis, which conditions certain of the trees appeared at that time to resist.

Samples E. and E.1 admit of comparisons between green and chlorotic leaves from young trees of similar age, growing under similar soil conditions, and where spraying with sulphate of aluminium had failed to reduce the amount of chlorosis.

In making the above comparisons, four points stand out in very striking fashion.

1. The percentage of dry matter present is, in all cases, appreciably higher in the green leaves than in the chlorotic leaves.
2. The ash in the dry matter is higher in the chlorotic leaves than in the green leaves in all cases excepting one—A.4 with A.5—in each case the difference is only very small.
3. The percentage of calcium is, in all cases, markedly lower in the ash of the chlorotic leaves than in that of the green leaves.
4. The percentage of potassium and sodium are always much higher in the ash of the chlorotic leaves than in that of the green leaves; especially is this so in the case of potassium, which may show an increase of 100% in the chlorotic over that of the green in comparable samples.

Other points which require mention are as follows:

1. The percentage of iron reckoned as Fe_2O_3 contained in the ash of green leaves is not always larger than that of the ash of the chlorotic leaves. The data recorded do not throw much light on this point owing to the complication introduced by the sulphate of iron treatment. Comparison of Fe_2O_3 in samples B.2 and B.3 shows that very large fluctuations in iron may occur normally in the ash of green leaves.
2. The data for the amounts of aluminium are not regarded as showing significant differences in either direction owing to the difficulties of estimating this element in samples of ash.
3. The percentages of magnesium are generally higher in the ash of the green leaves than in that of the chlorotic, but there are two cases in which the reverse is the case.
4. The silica content is higher in the ash of chlorotic leaves in six cases, and in that of the green leaves in two cases. The former differences are generally large, as also is one of the latter.
5. The percentage of phosphorus is higher in the ash of the chlorotic leaves in seven cases, and in that of the green leaves in two cases.

The results recorded here for calcium and potassium do not agree with those of several other workers on lime-induced chlorosis, whose results are reported by Gile and Carrero (3). These workers have generally found higher percentages of calcium and either similar or lower percentages of potassium in the ash of chlorotic leaves than in that of green leaves. They are, however, similar to those reported by Colin and Grandsire (2), and by Church (1) in carrying out similar studies on congenital chlorosis or albinism. These workers found that the salient points of difference in composition between green and chlorotic leaves of the chestnut, elm and other plants in cases of albinism were the higher dry matter content in the green leaves, the higher ash percentage in the chlorotic leaves, and the higher calcium content and correspondingly lower potassium content of the ash in the green leaves.

SUMMARY.

1. The results of an investigation on the composition of green and chlorotic leaves in some typical cases of lime induced-chlorosis of apple are reported.

2. Soil data are presented to show the nature of the soil conditions which were conducive to chlorosis in the cases considered.
3. Data on the composition of green and chlorotic leaf samples are provided, from which it is possible to make comparisons under various conditions.
4. The data show that the salient differences in the composition of green and chlorotic leaves in all cases are as follows:
    - *a.* Green leaves contain higher percentages of dry matter, and lower percentages of ash in the dry matter than do chlorotic leaves.
    - *b.* The calcium content of the ash of the green leaves is much higher than that of chlorotic leaves.
    - *c.* The percentages of potassium and sodium—especially potassium—are much higher in the ash of chlorotic leaves than in that of green leaves.
    - *d.* The differences in the amounts of magnesium, iron, aluminium, phosphorus and silica are not so definite in character as in the cases of calcium, potassium and sodium.

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THE EFFECTS OF LEACHING WITH COLD WATER ON THE FOLIAGE OF THE APPLE.[*]

(*C. E. T. Mann and T. Wallace*).

During the summer of 1924 observations made in the plantations at Long Ashton and in other localities in the West showed the foliage of several varieties of apples to be badly damaged by a very charactertistic form of spotting. Among the varieties on which this damage was observed were Cox's Orange Pippin,[†] Stirling

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[*] The present communication is an abridged form of a paper published in Journ. of Pomo. and Horti. Science. Vol. IV. Nos. 3 & 4, 1925

[†] It is not intended at present to connect definitely the damage here described with the form of spotting occurring on the leaves of Cox's Orange Pippin, frequently termed "Cox-Spot."

Castle, King's Acre Pippin and Allington Pippin. The severity of the trouble ran in the order in which the above varieties are quoted, Cox being very much more seriously affected than any other variety. Such varieties as Bramley's Seedling, Newton Wonder and Worcester Pearmain were quite unaffected.

Detailed observations on the foliage of Cox's Orange Pippin showed successive stages in the breakdown of the leaf tissues. Minute purplish spots appeared in the leaf blades, which increased in size forming irregular purplish blotches. Later stages showed, in the centres of these discoloured regions, small areas of dead tissue which appeared to increase in size progressively. The purplish discolouration persisted around the margins of the areas of dead tissue and probably indicated an intermediate stage in the breakdown of the leaf cells. Series of concentric markings in the dead areas of the leaves showed that the death of the cells was not continuous, but that periods of check occurred. So serious was this damage in the field that on June 24th practically every mature leaf on certain trees of the variety Cox showed signs of the trouble and defoliation was extensive in the worst cases.

The summer of 1924 was abnormally wet; at Long Ashton in the period from May 1st to July 31st the total rainfall amounted to 13.77 inches, as compared with 4.74 inches for the corresponding period in 1923. It appeared significant that the spotting trouble described should be so markedly severe in such a season.

In this connection some observations made in an independent investigation are of interest. Four series of one year old trees of Cox's Orange Pippin growing in sand cultures were prepared for different nutrient treatments. Two trees from each series were placed in a cold greenhouse and the remainder were set up in the open. On June 23rd it was noted that the foliage of the trees in the open was suffering from spotting trouble, whilst the foliage of the trees similarly treated but protected from rain was unaffected. These observations suggested that excessively wet conditions might be largely responsible for the damage described. The alternation of wet and dry periods would afford some explanation of the intermittent character of the trouble.

PART I.

To test whether the spotting effects described above could be produced on apple leaves by their alternate immersion in water and exposure to air, series of experiments were devised which are briefly described below.

A. Qualitative Experiments.

Samples of healthy leaves of the varieties Cox's Orange Pippin and Bramley's Seedling were immersed in cylinders of cold distilled water. After certain intervals of immersion corresponding samples for each variety were removed and allowed to dry off in the air, the time of exposure being also recorded. These experiments were performed in duplicate for each variety, both detached leaves and shoots bearing healthy leaves being used.

After about one hour's immersion portions of the leaf tissue exhibited a darker green appearance due to the injection of intercellular spaces with water. This injection occurred very readily in the case of Cox, especially if the leaves had been slightly damaged by folding. On removal of the leaves these darker green areas either disappeared or turned brown.

In either case, whether the leaves of Cox were attached to the shoots or immersed singly, after a period of two hour's immersion followed by an exposure to the air of one hour, clearly defined spots or patches of brown tissue appeared in the leaf blades. Spotting of a similar nature occurred to a very slight extent on the leaves of Bramley only after a period of approximately 24 hours' immersion followed by an exposure of from three to four hours. After a similar treatment only small portions of the leaves of Cox appeared healthy.

During the course of these experiments it was noticed that the water in which the leaves were immersed became coloured, indicating that certain substances were being removed from the leaves. This being so, it was thought that chemical analysis of the water in which leaf samples had been immersed should yield results of interest. Other workers have shown that the potassium compounds which occur in plant tissues are all readily soluble in cold water. Therefore should removal of solutes occur on immersion of a leaf in water, determinations of the amounts of potash contained in the solution after successive periods of immersion should afford figures indicative of the rate and extent of this removal.

B. Quantitative Experiments.

Three samples of healthy leaves, each of about 20 grams, were collected from trees of the two varieties, Cox's Orange Pippin and Bramley's Seedling.

The three samples for each variety were quickly weighed and treated in the following manner.

Samples 1. These were dried to constant weight at 98° C. The dry matter, total ash and the total potash (K_2O) in the ash were determined.

Samples 2. Each sample was immersed for three consecutive periods of 24 hours in a litre of distilled water and a final immersion of seven days was made. The four extracts thus obtained for each variety were evaporated to dryness, the residues "ashed," and the potash content of each extract determined. The extracted leaves were also dried to constant weight, ashed and the potash remaining in the ash determined in both cases as in Samples 1.

Samples 3. Both samples were crushed thoroughly and immersed in litre cylinders containing distilled water for 24 hours. At the end of this period the extracts were decanted off, filtered and evaporated to dryness. The crushed residue of the leaves was dried and the potash contents of both this material and the extract were determined.

This experiment was repeated for each variety with two samples of shoots bearing healthy leaves. The treatments followed were the same as those to which the detached leaves in Samples 1 and 2 above were subjected, analyses being made of the leaf blades and the extracts in a similar way. A summary of the main results obtained is presented in Table I, the quantities given being expressed as percentages.

NATURE OF THE EXTRACTS.

In these experiments the extracts were poured off, filtered and evaporated to dryness, and in every case it was found that they rapidly clogged an ordinary filter, though the extracts appeared quite clear. This fact suggested the presence of some colloidal substance, such as pectin, in the extracts. During the early stages of evaporation the extracts invariably turned brown, indicating the presence of oxidising enzymes. A characteristic smell of "apple jelly" was invariably noted during the final stages of evaporation.

TABLE I.

The Extent and Course of Removal of Soluble Compounds from Detached and Attached Leaves of Cox's Orange Pippin and Bramley's Seedling by Cold Water as indicated by

(i) Reduction in Dry Matter and Total Ash.

(ii) Amounts of Potash (K_2O) in Extracts and Residues.

(*a*) DETACHED LEAVES.

Variety.	Sample.	Dry Matter as % Fresh Wt.	Ash as % Dry Matter	K_2O as % Ash	K_2O in Extracts as % Total K_2O				
					1st 24 Hrs.	2nd 24 Hrs.	3rd 24 Hrs.	4th 24 Hrs.	Total Period
Cox	1. Healthy Leaves	33.7	5.85	27.2	—	—	—	—	—
Bramley		29.7	6.03	28.64	—	—	—	—	—
Cox	2. Extracted Leaves	23.17	2.66	0.24	64.05	25.0	5.71	4.96	99.72
Bramley		22.55	3.43	1.02	11.90	15.60	20.11	38.77	86.38
Cox	3. Crushed & Extracted Leaves	20.25	3.02	3.23	96.55	—	—	—	96.55
Bramley		20.90	3.54	4.95	93.20	—	—	—	93.20

(*b*) ATTACHED LEAVES.

Cox	1. Leaf Blades of Healthy Shoots	33.16	6.23	36.49	—	—	—	—	—
Bramley		35.47	4.91	31.72	—	—	—	—	—
Cox	2. Leaf Blades of Shoots after Immersion.	—	2.84	3.0	17.81	27.57	24.72	26.90	97.00
Bramley		—	3.34	24.77	9.82	13.24	15.18	36.98	75.22

Discussion of Experimental Results.

(*a*) *Qualitative Results.*

The qualitative results recorded above show that it is possible to produce a form of spotting on apple foliage by successive immersion of the leaves in water and exposure to the air. The conditions attendant on the production of this leaf damage in the experiments described and those obtaining in the field were in many respects comparable though differing widely in degree of severity. In the field when rain is accompanied in strong winds, as was frequently the case in the summer of 1924, it is possible for leaves to be completely covered with films of water for a period of several hours. Further, in long continued rain these films are constantly changing, so that virtually the leaf surfaces are being washed with running water. The condition is thus comparable with one of immersion of the leaf in water in that a large volume of water comes into contact with the leaf surfaces. The damage further caused by wind renders possible injection of the tissues in the damaged regions.

The results obtained with the two varieties agree well with plantation observations in which it was noted that Bramley leaves were much more " resistant " to spotting than were the leaves of Cox.

(*b*) *Quantitative Results.*

The quantitative results summarised in Table I. show clearly that certain substances may be removed from apple leaves immersed in cold water. The extent of this removal, for example, is clearly shown in the reduction in dry matter constituents approximately 26 per cent. of which were removed in the course of the experiment from detached leaves of both Cox and Bramley. The dry matter thus removed contained 67 per cent. of the ash constituents in the case of Cox and 58 per cent. in the case of Bramley. Complete determinations of the potash extracted and retained in the leaves showed that 99.7 per cent. of the total potash was removed from the leaves of Cox and 86.4 per cent. from those of Bramley.

The course of this removal is indicated in the analyses of successive extracts, and these figures show that removal is much the more rapid from the leaves of Cox.

In general the results obtained with whole shoots follow a similar course, though the rate of removal is less rapid in the case of both varieties.

PHYSIOLOGICAL CONSIDERATIONS.

Immersion of a healthy leaf in water exposes it to at least two processes calculated to damage the living cells comprising the leaf tissues :—

(i) A process of injection of intercellular spaces with water leading to asphyxiation of the cells in the injected region.

(ii) A process of lixiviation, or leaching out, of soluble cell contents.

These two processes are connected, since death of injected tissues, following asphyxiation, aids the rapid removal of solutes by leaching. But injection and death of injected tissues followed by the removal of cell solutes are insufficient to account for the large quantities of soluble compounds obtained in the extracts. In an experiment where shoots of Bramley's Seedling were immersed in water for 24 hours the leaves, on removal of the shoots, showed only slight damage. The shoots were placed with the cut ends in distilled water and the leaves remained healthy for several days, when they were finally detached for analysis. Analyses of the leaves and of the extract in which they had previously been immersed showed that approximately 10 per cent. of the total potash originally present in the leaves had been removed. The amount of dead tissue was quite inadequate to account for such a loss.

It is, therefore, clear that some other process must be concerned, and of these a process of lixiviation or leaching seems to be the most probable. The outer walls of the epidermal layers of leaf cells are permeable to some extent and further the occurrence of the stomata render possible the entry of water to the region of thin-walled cells comprising the bulk of the leaf tissue. When a leaf is immersed in water a process of dialysis will go on, whereby diffusible substances pass through the permeable outer layers into the water. The rate and ultimate extent of this removal will depend on the degree of permeability of the surface layers and the nature of the dissolved substances.

Potassium salts are very readily diffusible, and this may account for their almost complete removal from living tissues as shown in the experiments recorded here and those of other workers. Evidence that the permeable surface layers partially control the outward passage of dissolved substances from the leaf is afforded by the experiments with crushed leaves. When the leaves were immersed whole so that only the undamaged surfaces came in contact with the water, the loss of potash from the leaves of Cox and Bramley amounted to 112 per cent. and 164 per cent. of the totals respectively, in 24 hours. When the leaves were crushed approximately 95 per cent. of the total potash was removed from the leaves of either variety in the same period. These differences indicate :—

(1) that the outer surface layer controls partially the loss of dissolved substances from the leaf ;

(2) that the degree of this control varies with the variety of apple.

PART II.

The results of the foregoing experiments, showing that soluble compounds were leached from apple leaves by immersing them in cold water, suggested that a similar process might operate under natural conditions in the field. Further, if this be so, it should be possible to compare by the methods previously described, the resistance offered by the leaves of different varieties to this leaching action. To test these two points the following experiments were performed :—

I.—Four samples of leaves were collected from trees of the variety Cox's Orange Pippin, and the potash content of the ash of each sample was determined.

The ash from a sample of healthy-leaves yielded 36.5 per cent. of potash. The second sample, which comprised leaves showing stages of purplish discolouration but no dead tissue, contained only 22.1 per cent. of potash in the ash. These results indicate that the removal of soluble substances from the leaf occurs before the actual death of the tissues and not as a consequence of the death following a previous damage. The ash of a third sample of leaves, showing a moderate amount of dead tissue, contained 19.7 per cent. of potash, whilst the ash of badly affected leaves contained only 13.4 per cent. These results show quite definitely that soluble substances may be removed from leaves under natural conditions. The disappearance of potash from the leaves must be explained either by

(*a*) its withdrawal into the plant internally ; or

(*b*) its removal from the leaves and loss to the plant externally.

The fact that loss from the leaves occurred at a time when conditions were favourable for the passage *into* the leaves of water and dissolved substances seems to send the balance of evidence in favour of the first suggestion, which is strongly supported by the experimental results recorded in Part I.

II.—In order to compare the differences in the resistance of the leaves of certain apple varieties to the leaching action of water, healthy shoots were collected from trees of the following :—Cox's Orange Pippin, Allington Pippin, Bramley's Seedling, James Grieve, Newton Wonder and Worcester Pearmain. The procedure followed was similar to that employed in the experiments with attached leaves described in Part I.

Lack of space prevents the inclusion here of the complete record of experimental results obtained, but the course and extent of the removal of potassium compounds from the leaves of the several varieties is graphically represented in the accompanying figure (Fig. 1).

It is clear from the above figure that the course of potash removal is the same in each case, which indicates that the same processes are operating throughout. The extent of this removal is shown to

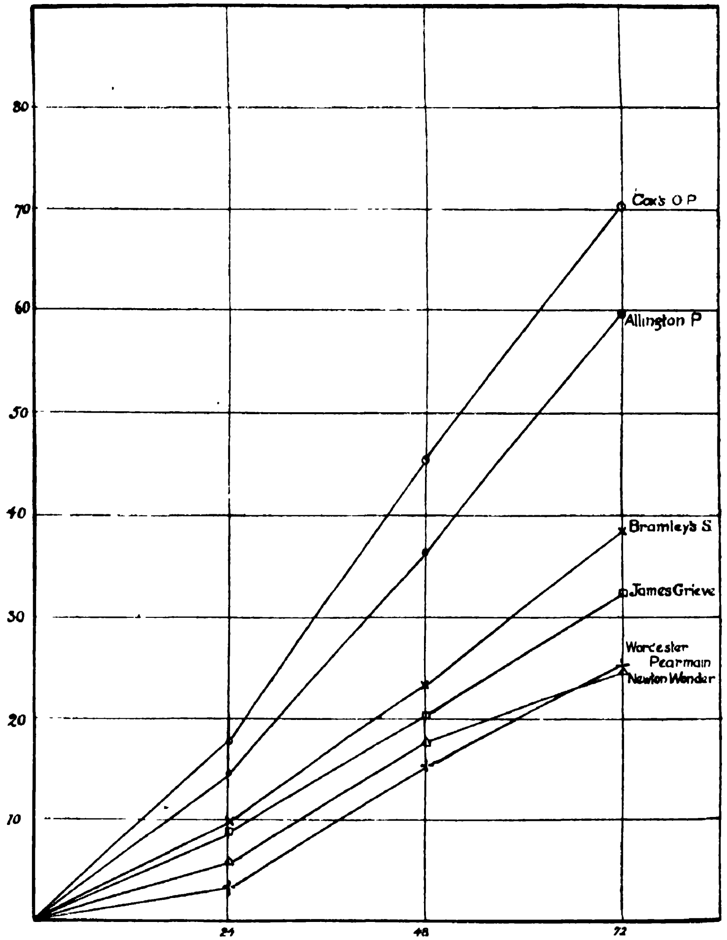

FIG. 1.

differ between wide limits in the varieties investigated, and it is significant that the least resistance to leaching is exhibited by the two varieties which were most seriously affected with the spotting trouble in the field. The differences obtained must not, however, be interpreted as indicating the order of varietal resistance. Before such an order can be established it will be necessary to experiment with trees of the same age on the same stocks under similar cultural conditions. These points are at present under investigation.

ON THE DISEASES KNOWN AS "BARK CANKER" AND "DIE BACK" IN FRUIT TREES.

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INTRODUCTION.

The term "Die Back" appears to be of American origin, and according to Stevens and Hall (20) it was first used by Rolfs in 1907 to describe a disease of peach and Japanese plum trees in Missouri. The name "Die-back" was descriptive of some symptoms of the disease which was characterised by a wilting and killing of twigs and branches, which commenced at the tips and progressed downwards to the larger limbs.

Considerable literature has accumulated on the subject of "Die Back" disease in different host plants, a list of which is given at the foot of the pages.

It is not proposed to give detailed descriptions of the fungi *Myxosporium corticolum Edgert*, *Cytospora spp.*, and *Diaporthe perniciosa Marchal*, which are mentioned in this paper, since full accounts of these organisms have previously been given by Miss Gilchrist (5), Wormald (23), and Miss Cayley (2), respectively.

OBJECT OF INVESTIGATION.

In the United States (11) the fungus *Myxosporium corticolum* is responsible for the superficial bark-canker of the apple and the pear. The fungus *mycelium* grows in the outermost bark tissues only, and it does not reach the cambium. Its progress into the tissues is arrested by a layer of cork developed by the plant in response to the stimulation induced by the invading fungus. The affected tissue is killed and eventually it sloughs away. Fruiting bodies, acervuli, are formed just beneath the surface of the bark. The damage caused by the fungus is so slight that it is doubtful if any remedial measures are ever necessary or profitable.

Wiltshire (21), followed by Miss Gilchrist (5), working on a "Die Back" disease of apple trees, came to the conclusion that it was due to *Myxosporium corticolum*. There is considerable difference between the disease as described by them and the Superficial Bark Canker of the United States, although the causal organism in both cases is the same. In England the wood is affected, whereas,

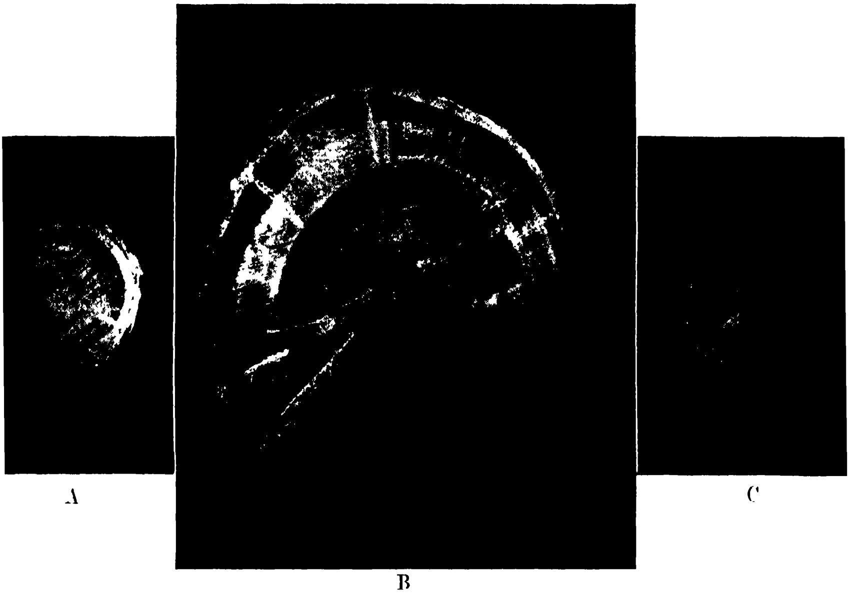

Fig. 1.
PLATE VIII.

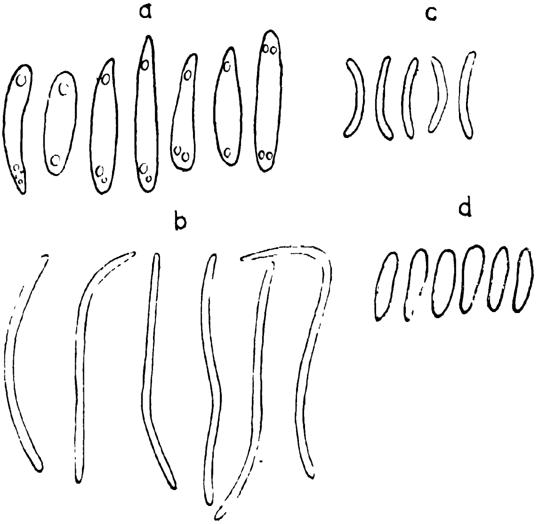

Fig. 2.
Plate VIII.

in the United States only the outer cells of the bark are affected, hence the name Superficial Bark Canker. To indicate this difference both Wiltshire (21) and Miss Gilchrist (5), called the disease Bark Canker, and omitted the word Superficial, since it did not apply in England. This has led to some confusion, since the disease in England is a " Die Back " and its cause, as will be shown later, is the same as " Die Back " in other fruit trees. The present paper has as its object the clearing up of the confusion between Superficial Bark Canker, Bark Canker, and " Die Back " in fruit trees, both in regard to the primary causes of the disease on different hosts, and the control measures to be taken against the disease.

THE DISEASE IN APPLE AND PEAR TREES.

The external appearance of the disease in apple trees is characterised by a longitudinal splitting on each side of an area of bark ½ to 1½ inches broad. The disease progresses very rapidly, and in a few weeks the splitting of the bark may extend for the whole length of a main branch five to six feet in length The disease may start at any portion of the branch, and in one case developed on the trunk of the tree just above soil level. In the latter, it caused the rapid death of the whole tree, whereas in the former, individual branches are killed one after the other. In contrast with the extremely rapid advance of the disease in a longitudinal direction is its very slow development transversely. Girdling of a limb is very slow. The bark between the two longitudinal splits later becomes sunken owing to the shrinking of the underlying tissue and the cessation of growth of the wood in the affected region due to the death of the cambium. The wood underlying the sunken area of bark is brown in colour to varying depths up to half an inch or more. Microscopic examination shows the presence of fungus hyphæ in the cortex, wood vessels, and medullary rays. As the bark is killed it invariably becomes covered with small raised black specks. These specks are the fructifications (acervuli) of the fungus *Myxosporium corticolum* Edgert. When mature a tiny slit appears in the bark at the centre of each speck. In moist weather the spores of the fungus (Plate VIII, fig. 2*d*) are liberated through the tiny slits and can be seen with the naked eye as white points. These are washed down the branches and trunks of the trees by rain. After the spores have been liberated, the acervuli appear as tiny, black, elongated and shallow pits. As stated by Miss Gilchrist (4) the disease is active only towards the end of the summer. The symptoms and development of the disease on pear trees are similar to those on apple trees. The bark splits longitudinally and is always followed by the production of innumerable acervuli of the fungus *Myxosporium corticolum Edgert.* The underlying cortex and wood take on a brown discoloration and are invaded by fungus hyphæ. In spite of the extremely regular occurrence of the fructifications of *Myxosporium corticolum* on the diseased bark of both apple and pear, it is difficult to regard this fungus as the cause of the disease. Over a dozen cultures have been made from time to time from the innermost diseased wood underlying the sunken bark of several affected branches, and on no occasion has *Myxosporium corticolum* been obtained in cultures. The fungus which grows in cultures of such diseased wood is always *Diaporthe perniciosa Marchal.* Cultures from the outermost diseased wood yield generally a mixture of *Myxosporium corticolum* Edgert, and *Diaporthe perniciosa* Marchal. When the disease has advanced and the tissues are drying up, pycnidia of *Diaporthe perniciosa* are often produced on the bark. Both *Myxosporium corticolum* and *Diaporthe perniciosa* produce conidia in culture. In the many cultures of *Diaporthe perniciosa* grown from diseased apple wood and the pycnidia on the bark, which the writer has always found to contain " a " conidia only, the fungus generally produces pycnidia with " a " type of conidia only, but in a few cases, both " a " and " b " types have been obtained in cultures made from " a " pycnospores. The " b " type as well as the " a " type are often formed by the fungus isolated from the plum, pear and Cherry Laurel (Plate VIII, Figs. 2*a* and *b*). The " a " conidia of *Diaporthe perniciosa* resemble somewhat in shape those of *Myxosporium corticolum.* The former, however, are much smaller, being only 7-9 × 2-3, whilst the conidia of *Myxosporium corticolum* measure 16-39 × 5-11. The fungus *Myxosporium mali* Bres. mentioned by Miss Gilchrist has not been found by the writer. Mr. R. M. Nattrass and Mr. F. E. V. Smith have subsequently made cultures from the innermost diseased wood on apple and pear trees. As with the writer, the fungus was found to be *Diaporthe perniciosa* Marchal. In view of the results obtained by culturing the underlying wood, Mr. Smith and the writer together made a detailed examination of the bark of apple and pear trees in the plantations at Long Ashton. They found that *Myxosporium corticolum* occurs on the bark of all varieties of otherwise healthy apple and pear trees which are twenty or more years old. Subsequent examinations of apple and pear trees throughout the western counties also showed that *Myxosporium corticolum* is always to be found on the bark of older trees.

SUPERFICIAL BARK CANKER

The fungus *Myxosporium corticolum* as it occurs on the bark of otherwise healthy trees, agrees with the above description of the Superficial Bark Canker (11) and (24) in the United States. The fungus attacks the outer bark of the trunk and larger limbs generally, but sometimes occurs on the damaged bark of the younger branches. The disease can be recognised at some distance by the reddish or bronze colour and the slightly sunken appearance of the portion of bark attacked. The affected areas range in size from small areas of a few millimeters only in diameter, to large patches measuring several inches across. These patches often coalesce and eventually the whole trunk is covered, so that it is extremely likely that the normal roughening of the bark in mature apple and pear trees in this country is due, in great part, to the activities of this fungus. Affected areas become covered with the innumerable fructifications of the fungus. The fungus hyphæ never penetrate beyond the few outer layers of the bark cells, and as is found in America, it never reaches the cambium. The affected layer of bark is separated from the healthy by cork cambium, which afterwards becomes suberised. Later, the outer bark can be easily peeled off with the hand. As a disease, it does not warrant consideration by the grower, and it is questionable whether the fungus is not, in some cases at any rate, beneficial, since it gives the softer tissues underlying the outer bark a chance to expand in growth, thereby lessening the danger of the tree becoming bark-bound. Growth splits which occur in branches and trunks of trees in some seasons often become infected with *Myxosporium corticolum*, but its activities are confined to the outermost layers of bark. This stimulates the tree to the formation of corky tissue underneath and this quickly closes a wound which otherwise might be open to infection by a serious fungus parasite, such as the silver leaf organism (*Stereum purpureum*) or the canker fungus (*Nectria galligena* Bres.). Cases of infection of growth splits by the latter fungus have been observed.

The following infection experiment on apple trees using *Myxosporium corticolum* and *Diaporthe perniciosa* separately, and together, as inocula has been carried out. The variety of apple trees used was James Grieve. In all cases a slit in the bark and wood was made with a sterilised scalpel, and mycelium from pure cultures of the fungi was introduced with a sterilised needle. and the wound was then bound with raffia. Six trees were selected and six branches of each used for the experiment. Five branches of each of the trees were inoculated, and the sixth branch served as a control in each case. The branches of two of the trees were inoculated with *Myxosporium corticolum*: the branches of two others were inoculated with *Diaporthe perniciosa*: and the branches of the remaining two with mycelium of both *Myxosporium corticolum* and *Diaporthe perniciosa*. The two fungi were used together because, at the time, it was thought that possibly one of the two fungi paved the way for the other, although any one of the two alone could not produce the disease. None of the inoculations succeeded in producing symptoms of the more serious disease of " Die Back," formerly known as Bark Canker, which is characterised by the longitudinal splitting of the bark. In almost every case, including the controls and those inoculated with *Diaporthe perniciosa* only, fructifications (acervuli) of *Myxosporium corticolum* developed on the injured portion of the bark. This infection experiment gave negative results in spite of the fact that inoculations were made at the end of August, 1923, at which time of the year the disease commences to become active again. The negative result of this experiment is very significant. Observations of the disease as it occurs in the field show that in all cases where the disease occurs on apples and pears, the trees are in an unhealthy condition from some cause or causes before infection by *Diaporthe* can take place.

THE DISEASE IN STONE FRUIT TREES.

As in the case of apple trees the symptoms of the disease vary according to the point at which the disease commences. If it starts at a wound on a branch the same longitudinal splitting and sinking of the bark is noticeable, particularly in the plum, although the bark does not split to anything like the same extent in stone fruit trees as in apple trees. In all the host plants callus is formed by the healthy tissue bordering on each side of the sunken area of diseased tissue. The bark of the diseased area takes on a reddish colour and eventually becomes covered with the fructifications of *Cytospora* sp., or *Diaporthe perniciosa*, or more commonly with a mixture of both, particularly in the plum. Where extensive bark splitting does not occur the branches become somewhat flattened on one side. This is due to the cambium being killed on one side, and therefore further production of wood at this region is impossible, whereas growth continues in the unaffected portion of the branch. The splitting of the bark is usually accompanied by an exudation of gum. The wood, below the sunken area of the bark is brown to more or less an extent depending on the degree to which the disease has developed.

Microscopic examination shows the presence of gum in the tissues, particularly the wood vessels and medullary rays. Fungus hyphæ may or may not be found present in the vessels of the wood. It has been observed that vessels whose cavities are completely filled with gum or tyloses do not contain fungus hyphæ. This is so marked that it strongly suggests that fungus hyphæ cannot penetrate readily through the gummy substance. Wound gum is probably, therefore, a deterrent to fungus infection. Branches and trunks of trees of all ages are subject to the disease. In the case of young trees which are generally attacked in the main stem, the fungus *Diaporthe perniciosa* usually gains entrance at the point of union of stock and scion, and sometimes through a large and incompletely healed wound. The disease girdles the stem and the tree dies from below upwards. In the field generally the first noticeable sign of the disease is the sudden browning and wilting of the leaves in midsummer, and soon afterwards the tree is killed. Later, the diseased areas become covered with fungus fructifications. These often develop whilst the branch or tree is still alive, provided the disease is confined to one side only. If the branch or trunk is completely girdled, fructifications appear after the tree has been killed. Several organisms are found in association with the disease on stone fruit trees. These include the fungi *Cytospora* sp., *Diaporthe perniciosa,* and in the case of few of the plum trees examined, *Myxosporium corticolum.* In the case of one plum tree about eight years old the fungus *Cryptosporella prunicola* Oud. was found. The identification of this fungus was made for the writer by Miss E. M. Wakefield at Kew. Owing to the fact that the perithecia of this fungus were found very closely associated with the pycnidia of *Cytospora* sp., it was at first thought that it might be the perfect stage of *Cytospora* sp. Cultures of both, however, proved beyond doubt that this was not the case. Only the perithecial stage of *Cryptosporella prunicola* Oud. were found. Masses of rod-shaped bacteria which agree with those described by Wiltshire (21) are also found in the plant tissues. These bacteria are generally confined to the area between the healthy and diseased tissues and are exuded as light yellowish beads when the overlying bark is pressed with the thumb. As previously stated, it is at these points that the splitting occurs. What appear to be the same bacterial masses occur in peach and cherry as well as in the plum. Attempts to grow the bacteria in pure culture on artificial media have failed. These bacteria have not been observed on apple, pear or Cherry Laurel suffering from the disease. The only organism which is constantly present in diseased tissue in all host plants is *Diaporthe perniciosa.* On young plum trees the fructifications of *Diaporthe* *perniciosa* are generally confined to within a few inches of the area whence the disease started, which in the majority of cases is low down on the stem at a wound or the point of union of stock and scion. The main stem above is covered with the fructifications of *Cytospora* sp. Portions of the sunken area of the bark of the Cherry Laurel were carefully incubated and examined for fungus fructifications, and the only ones found were the pycnidia of *Diaporthe perniciosa.* Both Mr. Nattress and the writer made several isolations from the diseased wood, and except where contaminations by species of Penicillium occurred, all yielded pure cultures of *Diaporthe perniciosa* to the exclusion of *Cytospora* sp., *Myxosporium corticolum* and bacteria. From the above it seems more than likely that, under certain conditions, the fungus *Diaporthe perniciosa* can produce the disease in all the host plants mentioned without the aid of bacteria, *Myxosporium corticolum* or *Cytospora* sp. On the other hand, the writer considers that although the fungus *Cytospora* sp. is a weaker parasite than *Diaporthe perniciosa* it, nevertheless, is sometimes independently, but more often following *Diaporthe perniciosa* a contributing factor in the killing of the plant. Furthermore the evidence of this paper proves that *Diaporthe perniciosa,* although the stronger of these two, is, nevertheless, also a weak parasite and cannot infect a healthy tree, but only those seriously enfeebled by one or more factors such as those discussed below. The general impression of the writer is that the bacteria are not pathogenic, but their presence cannot be entirely ignored. If, at some future date, they are proved to be weakly pathogenic, it will make no difference to the conclusion drawn in this paper.

EVIDENCE OF WEAK PARASITISM OF DIAPORTHE PERNICIOSA.

On Apple Trees.

The row of apple trees (James Grieve) on which the disease has mostly been studied by Wiltshire (21), Miss Gilchrist (5) and the writer, are twenty years old, planted ten feet apart, with the same distance between the rows, and main branches are covered with large *Nectria* and Scab cankers, as well as American blight. Furthermore, the variety is a heavy cropper and the trees have of late years, purposely not been freely manured. The trees were, in the first place, planted for intercropping purposes between standard orchard trees, but it was decided to keep them as material for experimental purposes. The fruit and leaves borne are small in size for the variety, which is another clear indication of lack of vigour. Wiltshire (21) also remarked on the poor condition of these same trees. Some of the branches have been cut back from time to time and have become infected with *Diaporthe perniciosa,* which under these conditions is capable of becoming a serious parasite. There was not sufficient vigour in the trees to push out the dormant buds below the point to which the branches were cut back. Had the trees been able to do this, the probability is that they would not have contracted the disease to any serious extent. The disease has also been observed elsewhere on pear trees about twenty years old, which were completely neglected during the war, and are badly attacked by both canker (*Nectria ditissima*) and Scab (*Venturia pirina*). During the war no cultivation of any kind was done, and since then they have received very little manure. Several young trees of different varieties were pruned in the early spring of this year, and since then they have been under close observation. In the normal course of events the pruned end dies back as far as the next bud below it. The great majority of these snags became infected with different fungi, including *Diaporthe perniciosa* and *Cytospora* sp., but, nevertheless, the twigs did not as a rule die back further than the next bud. In rare cases, the twig or branch died back to the second bud, and was infected to this point with *Diaporthe perniciosa, Cytospora,* and other fungi. The cause of this was invariably found to be due to damage of the uppermost bud. The trees in question were robust, and healthy plants which had been liberally and regularly manured. Similar observations have been made on fruit trees elsewhere. The disease never progressed further than the point at which a new shoot was formed. If *Diaporthe perniciosa* and/or *Cytospora* sp. are the primary cause of disease, it is difficult to understand why they do not kill the branches after gaining entrance into the tissues.

Three young apple trees which had been growing in pots for three years were transplanted into the open in the spring of this year. Early in June, when the trees were in leaf, they were given with other foodstuffs, a dressing of sulphate of ammonia. One of the trees was inadvertently given too heavy a dressing with the result that the roots were damaged and a few days later the leaves turned brown and the tree was defoliated. The tree later put out a fresh crop of leaves, but before it had recovered from the drastic treatment of three years of pot life, a transplanting in the spring, followed by a severe root damage due to the sulphate of ammonia, it contracted the disease described above. The disease did not appear in the other two trees, which remained comparatively healthy.

Apple trees are subject to a dying back of twigs and branches said to be due to *Cytospora* sp. The writer has never found this form of "Die Back" disease, except in cases of trees or individual branches enfeebled by some other disease or physiological disturbance.

On Plum Trees.

Early in the summer of 1923, two unusually tall standard plum trees (some of the stems 7ft. 6ins. in height) about nine years old, were sent to the writer from the Evesham district. The trees were dying, although the uppermost branches were still living and were bearing yellowish green leaves. Very little growth had been made in that year. The lower part of the main stems were dead and covered with pycnidia of *Cytospora* sp. and *Diaporthe perniciosa.* The roots were all brown, dead and water-logged. The condition of the root system suggested bad drainage. The trees were seen by Mr. Locke, Foreman of the above Station, who recognised the trees on account of their exceptionally tall stems, as some he had planted some years ago in a low lying and badly drained orchard near Evesham. Mr. Locke states that, at the time of planting, he was convinced that they would not do well in that orchard. The soil in the orchard was later examined by the Station Soil Chemist, Mr. Wallace, who describes it as follows :—

> "A water-logged tract consisting of a surface layer of peaty material overlying a bed of impervious Blue Lias Clay."

The remaining plum trees in the orchard are not looking healthy, and some show signs of infection by *Diaporthe perniciosa.* This is a clear case of trees, whose history is known, becoming enfeebled on account of bad drainage and killed by subsequent infection of *Diaporthe perniciosa,* followed possibly by *Cytospora* sp.

Plate VIII, fig. 1A, shows a cross section of the main stem of a young plum tree which was in a dying condition. The roots as in the above case were brown throughout. The tree was uprooted in the summer of 1923. The wood formed in 1923 is comparatively clean as compared with the deeply stained wood formed in the previous year 1922. The brown discolouration is due to the presence of gum in the wood vessels. Gum was present also in the medullary rays and cortical tissues. Discoloured wood of this kind is not invariably invaded by fungus hyphæ. The browning of the wood is either the result of the reaction of the plant to the actual presence of hyphæ at this point, or due to toxic substances produced by the fungus in tissues lower down on the stem and carried up through the vessels. In either case, if the primary cause of the disease is due to infection by one or more fungi, or other organisms, it is more than probable that, after getting such a hold on the plant as to affect the wood formed during the whole of a growing season, the organism would have continued to do so in the following season. The only possible explanation is that the fungus is a weak parasite and its growth in the plant tissues has been checked in 1923 owing to a drastic change taking place in the environment of the plant. This in some cases is undoubtedly correlated with the amount of rainfall. Plate VIII, fig. 1B, shows this very clearly. The cross section shown is of the main stem of a plum tree, one branch only of which was dead. The roots were examined and only one large root was found to be completely brown. The tree had been grown in the same position in the plantations of the Research Station, East Malling, Kent, for several years. The tree was, through the kindness of Mr. Hatton, cut down for examination in 1923. It will be seen that the disease had been present for some years. It is significant, however, that during one year, namely 1921, the tree formed more and cleaner wood than in any other year. It is common knowledge that in the year 1921, the summer in England was exceptionally hot and dry. Plate VIII. fig. 1C, is a cross section of the main stem of a young plum tree which again shows seasonal activity of the disease.

Several plum trees have been examined and found to be in an advanced stage of the disease, and the roots have been found on cutting, to be clean and healthy looking. This was particularly so in the case of plum trees brought in from another fruit farm in the Evesham district. The trees were growing on light gravelly soil on a hill. In a normal year the soil dries out to a considerable depth in the summer. It is well-known as one deficient in potash, and in consequence the apple trees in the plantation suffer from serious scorching of the leaves. Plum trees of seven or eight years old can be shaken from one side to the other with one hand. Unpublished experiments with willow cuttings by Wallace and Hutchinson at the above Station indicate that there are considerably more fibrous roots produced by plants growing in nutrient media containing potash than are produced by those grown in a medium deficient in potash salts. It is easily understood, therefore, that trees growing in gravelly soil deficient in potash cannot possibly produce a root system capable of absorbing sufficient moisture from a soil which is liable to dry out in summer. The general health of fruit trees can, therefore, be so seriously lowered, not only by excessive soil moisture due to bad drainage, impervious subsoil, etc., but also by insufficient moisture, whether this be due to the physical texture of the soil coupled with, or independent of, potash deficiency, as to make them susceptible to attack by the weak parasite *Diaporthe perniciosa* and possibly other organisms. So far as the root system of a plant is concerned, the effect of a waterlogged soil and a soil too dry is physiologically very similar. In the first case waterlogging asphyxiates the roots so that they are unable to function as absorbing organs; in the second case the roots are possibly killed through excessive dryness, and in any case they cannot absorb moisture from a soil which has become desiccated beyond a critical point. As already stated, the disease becomes active in the summer, but the pot plant damaged by sulphate of ammonia and alluded to above, contracted the disease early in June after the second crop of leaves had appeared. The production of a second crop of leaves drained the shoot of its reserved food material which further lowered the plants' vitality, and before it recovered as the result of leaf and root activities, the plant contracted the disease. The progress of the disease in this plant was extremely rapid once it started. Miss Cayley (2) states, and Plate VIII, fig. 1A, B and C corroborates this view, that "infection occurs a considerable time—in some cases probably years—before any definite external symptoms can be seen; but that, once wilting has occurred, the affected areas die very rapidly . . . ." The reason for this is due in the first place to some physiological factor which upsets the metabolic balance of the tree so that *Diaporthe perniciosa* becomes parasitic. This infection further weakens the plant and usually the cambium is killed within a certain area. Progress of the disease is checked by change of conditions due to change of season or rainfall. The following year, or possibly longer, conditions again become unsuitable to the plant, and the fungus continues growth as a parasite. The rapidity of the advance made by the fungus depends on the degree of unsuitability of the conditions under which the plant grows. In the summer transpiration is at its maximum because the plant is in full leaf. The roots of trees growing in either too wet or too dry conditions from any cause cannot absorb sufficient to keep up the claims made on them by the transpiring leaves, and the fungus under these conditions is able to kill further areas of cambium. The death of more and more cambium, and of wood in the same region, from year to year narrows down the conducting channels between roots and shoots in an upward and downward direction. The effects of the primary and secondary (*Diaporthe perniciosa*, etc.) causes of the disease are, therefore, accumulative from year to year until a point is reached when the plant is so enfeebled that *Diaporthe perniciosa* can grow as a parasite much more rapidly, with the result that the last stages of the disease are far more rapid than at the beginning.

Several plum tree branches were artificially infected with Silver Leaf (*Stereum purpureum*) for experimental purposes in the late summer of 1923. In the case of one tree a large branch contracted the " Die Back " disease in 1924, after the leaves had become silvered. Here is a case of the parasite *Stereum* weakening a branch to such an extent that *Diaporthe perniciosa* is able to cause a secondary disease. Mr. Nattrass informs the writer that he has observed similar cases elsewhere where Root Rot caused by *Armillaria mellea* was the first cause of the disease.

On Young Plum Stocks.

The disease is often present in young stocks before any budding or grafting is done. An interesting and convincing case occurred at Long Ashton this year. The stocks (variety Blaisdon Red) were bought and planted out in rows in the autumn of last year. At the time of planting they were in a very poor condition, although there was no sign of " Die Back " disease present. In the spring of this year some of the plants failed to make any growth at all, whilst the others succeeded in doing so. Early in the year some of the failures were pulled up and thoroughly examined. The stem tissue was clean and healthy looking, but the stub below ground was brown and no sign of new root formation. Later in the summer another lot of the plants which had produced no growth were examined and found to have made no new roots. The stems were dead and the bark covered with fructifications of *Cytospora* sp., *Myxosporium corticolum* and *Diaporthe perniciosa*. Plate IX, figs. 1 and 2, shows the correlation between the extent of the disease and the amount of shoot and root growth. This is a case where the development of the disease has been closely observed, and shows clearly that *Diaporthe perniciosa* and possibly other organisms came in as secondary factors. Plate IX, fig. 1, Nos. 2 and 4, illustrates the checking of the " Die Back " at the point where new buds have grown out. Plate IX, fig. 2, No. 5, shows very slight development of roots coupled with the production of a feeble sucker and side branch.

The disease gets into young stocks as the result of rough handling and an unfavourable season or soil subsequent to transplanting from the stools or layers. The general practice is to dig up or rip up the young stocks and to heel them in before planting. The stocks take some time and often fail to recover, after planting, from this rough treatment, and *Diaporthe perniciosa* and possibly *Cytospora* sp. and other organisms in the meantime are a distinct source of danger. Where hundreds of thousands of young stocks have to be planted out there is a limit, for economic reasons, to the amount of attention that can be given in transplanting. However, it is far sounder to dig up the rooted stools rather than rip them up. In the former, a considerable number of the roots are retained; whereas, in the latter, they are mostly destroyed. Before planting it is also advisable to go over each bundle and trim up the stub and shoots with a sharp knife, making good clean cuts. Further, it is obvious for a number of reasons that in heeling in, care should be taken not to damage the root and shoot with hob-nailed boots.

Another source of danger is in budding, and, if the latter fails, in grafting on stocks too soon. This operation, particularly grafting, which for other reasons is a bad practice, is an additional check before the young stock has become established after moving. In some nurseries the stocks, in preference to the scion, are carried up to form the stem in the case of standard and half standard trees. This is sound for three reasons: (*i.*) It gives the stock time to become thoroughly established. (*ii.*) The union of stock and scion will not be buried below soil level after leaving the nursery and put in their permanent position. (*iii.*) The union callouses over more completely and makes a straighter and therefore stronger stem than when budding or grafting is done low down on thick and oldish wood. There is a tendency for trees sent out of the nursery with poor root systems to be planted too deeply to ensure good anchorage. This is done in all classes of soil, and is a dangerous and bad practice in heavy land. Plum and other stone fruit trees should not be planted deeply, especially in heavy, wet and cold soils. Trees so planted take a long time to establish themselves in their new quarters, since the whole of the root system must undergo a process of regeneration, and in the meantime *Diaporthe perniciosa* is a source of danger. New roots must be produced higher up where conditions of moisture and aeration are most suitable for growth. Hatton, Grubb and Amos (7), working with apple to investigate the effect of depth of planting on the growth of the tree, state that " (*i.*) the results depend to some extent on the variety of root stock; (*ii.*) seasonal variations affect the results; (*iii.*) the four or five inches difference in depth of planting give an obvious demonstration of the better anchorage of the deeper planted trees." These three points are probably true of plum and other fruit trees and recommendation in regard to the earthing up of young stocks and the planting of young trees must be of a general character. It would be best in all classes of soil to plant as shallow as is compatible with good anchorage. These depths will, of course, differ for light and heavy soils. If the weather in the following growing season is too dry, the plants can easily be earthed up. On the other hand, if the plants in the first place are planted deeply and the season is wet, the soil cannot very well be removed without damaging the plants, and they suffer in consequence. In other words, it is safer within reasonable limits to err on the side of shallow planting of young stock, since in dry weather this can be rectified by earthing up.

On Cherry Trees.

Young cherry trees suffering from the " Die Back " disease were examined by the writer in the summer of 1924. The tops were still living and bearing leaves although in a very weak state. The root system was completely dead and brown. Subsequent inspection of the nursery proved the primary cause of disease to be a soil factor. The surface soil was light and sandy, and to all appearance favourable for growing cherry trees. Within six inches in some cases, and a foot in others, of the surface, the soil consisted of a mixture of almost pure sand and small and large sand stones. The apple trees showed leaf scorch as well as the gooseberry bushes. There has been a certain amount of neglect in hoeing, since a considerable number of roots were damaged and exposed above the surface of the soil. The soil was typical of those which are deficient in potash. The cherry trees still left in the nursery show no sign of " Die Back " disease (no fungus infection) since tests were made with the knife for diseased cortex. The leaves, however, were purplish and more highly coloured than is normal for the time of year, and in many cases the tissues between the veins were drying out. Here is another case where symptoms of abnormality are apparent before the advent of any weak parasite or parasites.

OCCURRENCE OF DIAPORTHE PERNICIOSA ON FRUITS.

So far as the writer is aware, the fungus *Diaporthe perniciosa* has not been recorded previously in this country as a parasite in the orchard on any kind of fruit. This summer, however, a specimen of peach fruit was received by the Advisory Mycologist for investigation. The fruit was attacked by a soft rot. and on the outside of the rotted area there were innumerable fungus pycnidia. These were identified as *Diaporthe perniciosa* and the fungus was isolated from poured plates of the conidia as well as from the internal diseased tissue. At about the same time the writer collected in the plantation at Long Ashton a few undersized and rotting fruits on apple trees (var. Wellington or Dumelow's Seedling). The fruits were attacked by Scab and a soft brown rot. The rotted portion was studded all over with the pycnidia of the fungus *Diaporthe perniciosa.* Poured plates of conidia were made and the fungus obtained in pure culture. Inoculation experiments through wounds were made on both Wellington and Bramley apples. The fungus produced through a wound a soft brown rot and produced pycnidia on the fruit. *Diaporthe perniciosa* was again isolated from the innermost diseased tissue from the four inoculated fruits, and a further inoculation and isolation proved the fungus to be pathogenic. No rot developed in the controls. Recently, diseased fruits of Medlar, sent for investigation, were found to be covered with pycnidia of *Diaporthe perniciosa.* The fungus was isolated from the diseased tissue as well as from pycnospores. Whether or not the fungus is parasitic on Medlar fruits remains to be proved.

FURTHER EVIDENCE OF WEAK PARASITISM OF ORGANISMS ASSOCIATED WITH THE SAME AND SIMILAR DISEASES.

The following extracts from different publications by other workers on the same and similar diseases in trees strongly support the present writer's views in regard to the disease known as "Die Back" in this country, with which the fungi *Diaporthe perniciosa*, *Cytospora* sp., and bacterial organisms are associated :—Leonian (13) in his account of an Apple Canker (*Cytospora leucostoma*) in New Mexico, concluded that old and neglected trees are the only ones which can be affected by this organism.

Long (14), working on a disease of Poplars in America, caused by *Cytospora Chrysosperma*, stated that the fungus is a serious parasite under conditions such as the following :—(*a*) On trees which are growing at the outer limit of their range and are therefore in a more or less unfavourable environment; (*b*) On trees weakened from neglect and lack of sufficient water; (*c*) On trees severely pruned as in pollarding.

Povah (17), who studied the same disease of Poplars in Syracuse, N.Y., states that *C. Chrysosperma* attacked Poplars weakened by fire.

Moss (16), who investigated the disease caused by *C. Chrysosperma* in Ontario, states that :—"Younger trees of *Populus deltoides*, especially if seriously injured or weakened, are likely to succumb to the attacks of *C. Chrysosperma.*"

Rolfs (18), on Peach trees :

"The age and physical condition of the tree have a marked influence on the extent of injury done by the fungus. Young vigorously growing trees are not seriously injured by it. On the other hand, old neglected trees, especially those standing in sod, are sometimes permanently injured. The real source of danger lies in its attacks on weakened or injured trees, especially those injured by frost."

" Frost, impoverished soil, wet land, lack of moisture, too deep planting, lack of cultivation, wind, fire, or anything which weakens or injures the tissues of the trees aid the organism more or less in its advancement."

Similar evidence can be obtained in the following papers :—Hubert (12), Hahn, Hartley, and Price (6), Hahn (7), Stevens (19), and Hemmi (10).

GENERAL CONSIDERATION.

It would appear that all or any of the organisms, including the fungi and bacteria, which are found in trees suffering from " Die Back " disease, can only become pathogenic after the vitality of the tree has been lowered on account of some physiological disturbance. It is, in consequence, important to consider what are the factors which cause these internal disturbances within the plant. Some of these have already been partly discussed, namely, excessive soil moisture and insufficient soil moisture. The relationship between soil moisture and the growth of plants is a big question, and it cannot be fully discussed in the present paper. In England, however, as in other countries, the soil is very variable in character, not only in different districts, but often within a small area of an acre or less. Furthermore, the amounts of moisture in these different types of soils varies according to whether the season is dry, medium or wet. It is evident, therefore, that in soils which normally become very dry in summer, a wet season is advantageous to the plants growing in such soils. Those soils which are normally wet throughout the year, improve so far as the plants are concerned if the summer is dry, as in 1921. In an abnormally wet year, such as the year 1924, soils the moisture contents of which are normally within the range of the plant's tolerance become too wet and the plants suffer. Thus, a dry season might check the progress of " Die Back " disease in some soils, whilst in others the disease progresses rapidly. Apart from the physical nature and condition of a soil—the growth of a plant is also dependent on the chemical nature of the soil. Some contain an excess or insufficiency of lime ; others are deficient in available nitrogen, potassium, or phosphates. Excess or deficiency of any of these chemicals affect the general health of the tree to different extents. In some cases it is extremely difficult to decide what is the factor which affects the growth of the plant. In others the symptoms of the plant are helpful, *e.g.*, Leaf Scorch, Chlorosis. A good many troubles can be avoided by judicious, regular and complete manuring, and a good many can be brought about by neglect of manuring or unbalanced manuring. It needs but little experience to recognise by the tree itself whether it is being overfed or under fed. In addition to carrying a good crop of fruit a tree should make a fair amount of new shoot growth. If this is not done, then it is evident that manuring is necessary. On the other hand, if a fruit tree makes strong new shoot growth year after year and bears no fruit, it is equally evident that the tree wants to be checked (*e.g.*, by ringing, light pruning, clamping, or transplanting) to throw it into a fruiting condition. The amount of manure to be given afterwards will be decided by the amount of fruit borne and the growth made. If unmanured fruit trees are allowed to bear heavy crops year after year, very little new growth will be made, the fruit will be small and the general health of the tree is so lowered that sooner or later it will succumb to one or more diseases.

Most fruit trees are subject to attacks by insects and fungi, and often conditions which favour one may suit the other. A well-known example of this in England is Brown Rot and Aphis attack on plum and other fruit trees. It is common knowledge amongst growers that a bad attack of Aphis and Brown Rot not only may cause complete loss of the crop in the year of attack, but also in the following year and possibly the next. The check to the trees is, therefore, of a very serious nature. During the period which elapses between the attack and recovery, the tree is in a low state, and it is extremely probable that organisms such as *Diaporthe perniciosa*, *Cytospora*, etc., can, under such conditions, cause further serious damage to the trees.

In some seasons some varieties of plum trees produce a second crop. This is an unusual procedure for plum trees, but an unusual behaviour of any plant is merely the usual reaction to unusual conditions. In other words, plants never do anything unusual or abnormal, strictly speaking, but are true to their habit by reacting to unusual conditions. Thus a tree does not produce a heavy single crop or a second crop because it is going to die or be weakened, but rather the cause of death or weakening is such that the normally behaving plant produces a heavy or second crop. A sudden, serious, but temporary check in the growing season sometimes

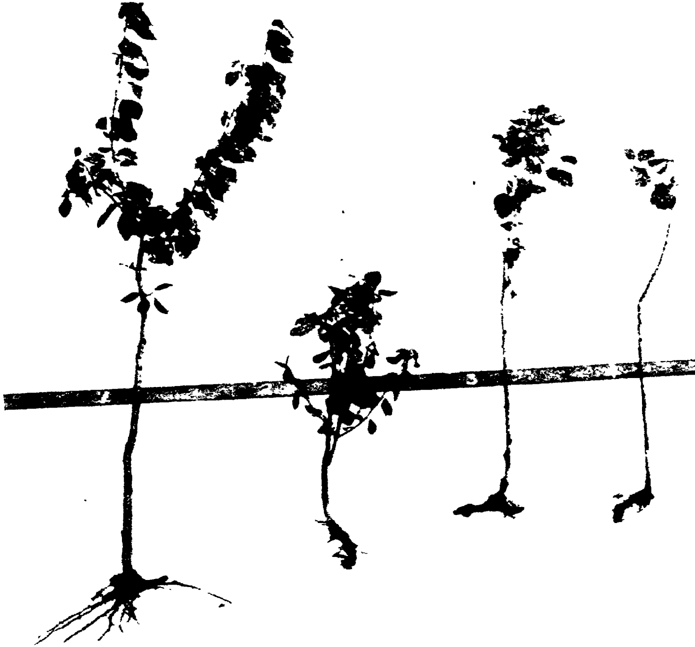

Fig. 1.

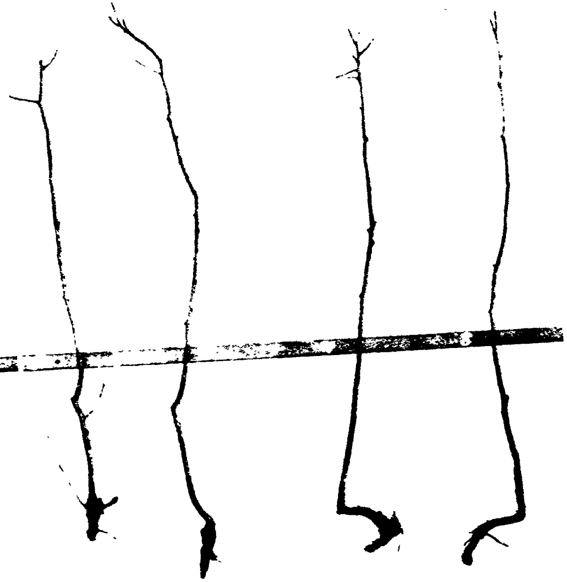

Fig. 2.

PLATE IX.

causes fruit trees to bear a second crop. The production of this second crop drains the plant of its reserved food material, which cannot possibly be replaced in the short period between the removal of this second crop and leaf fall and dormancy.

It is often desirable to head back trees, or to remove large branches for the purpose of thinning. Some kinds of fruit trees can withstand this form of treatment more than others. Nevertheless, there is a limit to which heading back can be done without affecting the health of the tree, particularly when large limbs are roughly hacked off or cut through with a saw or other blunt implement. It is advisable after removing a branch with a saw to pare the cut end obliquely with a sharp knife or chisel. Branches should also be removed at the base close up to the mother branch or main stem. After paring off, such large wounds should be treated with a wound dressing all over and freshly pared again round the outside edge, so that the inner bark (cambium) is left cleanly cut and in the best condition for quick callus formation.

Hatton (9) finds that different stocks affect the growth of the scion in different ways such as the following:—

(A) Some impart vigour. (B) some have a slight dwarfing effect. (C) certain stocks accelerate the actual time of blossoming whilst others delay it. (D) under the conditions at East Malling some have a firmer anchorage than others. (E) Some stocks seem to show what is described as incompatabilities with certain varieties, whilst for other varieties they may be good stocks. In some cases either buds fail to make in any quantity or sometimes established trees break away at the point of union.

In view of these effects of different stocks on the growth and general behaviour of the scions worked on them, it is possible that a variety worked on one stock may be more susceptible to "Die Back" disease than others. This point is under investigation at the present time at Long Ashton. The remarks given above in regard to the views of some continental workers on cherry "Die Back," and the effect on time of blossoming found by Hatton (9) is extremely interesting. Some German workers, already mentioned, stated that late spring frosts was the predisposing factor to "Die Back" in cherry. It is possible that the use of stocks which delay the time of blossoming, in districts liable to suffer from late frosts, might be an important factor in the extent to which the disease would occur under those conditions.

CONTROL.

It is generally accepted that healthy vigorous trees are less liable to succumb to disease than those in a weak condition, but so far as " Die Back " disease is concerned a study of the conditions under which the plant grows is all-important before any treatment can be recommended. The predisposing cause may be due to any one or more of the factors mentioned above, and these by no means exhaust the number which can bring about lack of vigour in fruit trees. Growers troubled with " Die Back " in their fruit trees are strongly advised to consult a specialist in the subject of plant diseases, because by so doing they will often be able to avoid very serious losses in their plantations. It is futile to attempt to fight the fungus by direct methods once it has gained entrance into the plant. To remove dead and diseased tissue, if in the main stem, and it usually is, means killing the tree. Even if it were possible to remove diseased tissue without killing the plant, this would by no means cure the disease. On the other hand, the disease can, in the majority of cases, be prevented and checked by the elimination of the primary and fundamental cause or causes which predispose the plant to disease.

In conclusion, I wish to express my thanks to Prof. Barker, Director of the above Station, for his constant and kind direction ; to Miss E. M. Wakefield of the Herbarium, Kew Gardens, for identifying and checking the identification of some of the fungi mentioned in this paper ; to Dr. G. H. Pethybridge for his kindly criticism and helpful suggestions in regard to the arrangement of the paper before publication ; to Mr. W. Camps, of the above Station, for taking the photographs, sometimes at short notice and personal inconvenience.

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EXPLANATION OF PLATES.

Plate VIII.

Fig. 1. (A, B, and C) shows the effect of season on the development of " Die Back " disease. Sections of Plum trees.

Fig. 2. (*a*) The " a " spores of *D. perniciosa* × 900.
(*b*) The " b " spores of *D. perniciosa* × 540.
(*c*) The pycnospores of *Cytospora* sp. × 1000.
(*d*) The conidia of *M. corticolum* × 300.

Plate IX.

Fig. 1. (1) Healthy plum stock (Blaisdon Red).

Fig. 1. (2, 3, and 4). Plum stocks (Blaisdon Red) showing various stages of " Die Back " disease. Note poor root systems.

Fig. 2. (5) Blaisdon stock very badly affected with " Die Back " disease.

Fig. 2. (6, 7 and 8) Blaisdon stocks killed by " Die Back " disease. Fructifications of D. *perniciosa* and *Cytospora* sp. on bark.

*REVERSION DISEASE OF BLACK CURRANTS: MEANS OF INFECTION.

By A. H. Lees, M.A.

The following paper deals mainly with work that has been in progress for some years, but which, from its nature, did not admit of a speedy culmination. Statistical observations have been continued this year with the assistance of Mr. C. E. T. Mann, Plant Physiologist at Long Ashton, who is responsible for the presentation of the evidence relating to them. The investigation of the disease has long called for the co-operation of a competent physiologist as there are many promising lines which can only be fully explored by modern methods.

In previous papers dealing with Reversion in Black Currants attention has been directed to such points as the characters of the disease(1), means of identification(2), possible connection with the Black currant mite, *E. ribis*(3), and control. At the same time, however, various experiments were started with a view to elucidate its means of entry into the plant. The most obvious line was to investigate by direct experiment the influence of an infection of mite on healthy plants. Cases of disease, however, were comparatively frequent where no possible connection could be traced between mite and the infection of reversion. Thus it was by no means infrequent to find new cases of reversion arising in which either no mite could be found or mite was present in such small quantity as to suggest that it was not the true cause.

GRAFTING EXPERIMENTS.

Accordingly, in order to test whether the disease could be propagated, trials of grafting were started in the year 1920, and were continued in 1921. These first two years, for various reasons, gave only failures. It was not then easy, nor has it proved easy subsequently, to obtain grafts on the black currants. The graft can be made but a successful union is not often obtained. On the only successful grafts of 1920 a tree was felled so that even where there was a chance of obtaining a positive result this chance was ruled out by accident. This sort of experience was repeated in a similar manner for grafts on plantation bushes where in most cases, before results could be obtained, the graft was knocked off or out by cultivating tools or the whole situation was complicated by the arrival of big bud.

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Owing to these various reasons it was decided to make grafts very largely on pot trees so that the plants could be preserved free from accident and if possible from mite infection, until either positive or negative results could be recorded.

Table I sets out the results obtained from grafting reverted scions on healthy stocks.

TABLE I.

Effect of grafting diseased scions on healthy stocks.

No.	When grafted	With what	Same year plant	2nd year		B.B. Present	3rd year	
				Flowers	Shoots		Flowers	Shoots
1	Spring 1922	Revert Boskoop 2. 1. 13	N	N	N	No	N	N except shoot near base
2	,,	Do. 2. 3. 21	,,	,,	,,	,,	R	R
3	,,	,,	,,	,,	,,	Yes on graft	,,	,,
4	,,	Do. 2. 1. 13	,,	,,	,,	No.	Part R ,, N	R except shoot near base
33	,,	Revert Seabrook 6. 1. 13	,,	,,	,,	,,	None	One shoot Rev. 6
36	,,	,,	,,	,,	,,	,,	,,	Some leaves Rev. 4
34	,,	,,	,,	,,	,,	—	—	—
35	,,	,,	,,	,,	,,	—	—	—
14	Spring 1923	Revert Boskoop 2. 5. 6	Some temporary reversion	,,	R	No	—	—
15	,,	,,	,,	,,	R and N	,,	—	—
16	,,	,,	,,	,,	,,	,,	—	—
17	,,	,,	,,	,,	N	,,	—	—
18	,,	,,	,,	,,	R and N	,,	—	—
19	,,	,,	,,	,,	R	,,	—	—
20	,,	,,	,,	,,	R and N	,,	—	—
21	,,	,,	,,	,,	,,	,,	—	—

In every case the stock plants were kept under observation for one or two years previously in order to rule out, as far as possible, all chance infection.

The 1922 grafts were made with grafts from three different sources, two being Boskoop Giant and one Seabrook's Black. In each case the stock used was the same variety as the scion. Of the eight 1922 grafts, six ultimately produced reversion on the stock by 1924, while two were still free in 1923, but were lost during the operation of repotting. The original bush Seabrook 6. 1. 13 was only slightly affected at the time that the grafts were cut, and this weakness reappears in the stock to which the disease has been communicated. In the two successful cases, though reversion showed on a shoot in each case, the intensity, judged by the leaf-vein method, was slight (veins 6 and 4).

Disease on Boskoop 2. 1. 13 and 2. 3. 21 was apparently of equal intensity when the selection of grafts was made, but their subsequent history suggests that the disease 2. 3. 21 was stronger. In this case by 1924 the shoots and flowers from the stock were fully revert with the exception of one basal shoot in one of the two plants.

The 2. 1. 13 grafted stocks in 1924 still showed a fair proportion of normal shoots and flowers, though the disease had quite evidently appeared on some. In only one of these eight 1922 grafts did Big Bud appear and this was on a graft and not on the stock.

The 1923 grafts were all Boskoop on Boskoop and the bush selected for grafts was of a pronounced revert type. In the summer of 1923 all the eight grafted stocks showed well-marked temporary reversion due to the cutting back that was done after grafting. There is nothing to suggest that the disease made a quick infection from graft to stock during the year of grafting, and the results for 1924 show that even then the disease was not spread throughout the stock. In no case were any of the flowers on the stock shoot revert. The leaves, however, showed the beginning of the spread of the disease. In number 17 no infection had been made. In 15, 16, 18, 20 and 21 some shoots were revert and some normal. In 14 and 19 the shoots were all revert. The intermediate cases, where both normal and revert shoots were produced from the stock, were particularly interesting, as in them the course of the disease could be distinctly traced. Fig. 1 illustrates the result obtained for number 15. The shoot behind the graft, which did not " take," is clearly reverted, while the shoot issuing a little further away was still healthy when the photograph was taken. This slow progression of the disease is also shown in Figs. 2 and 3, but especially in 2, where the shoot immediately behind the graft was most reverted, the next one less so, and the one farther away quite free. In all these 1923 cases the graft failed to " take," but this fact did not prevent the propagation of the disease though it may have lowered its rate of spread.

These sixteen grafted plants would appear, therefore, to suggest the following conclusions :

(1) That reversion can be propagated by contact.

(2) That it is therefore an organic and not a functional disease.

(3) That since no organism has been found after many attempts the disease probably belongs to the class of virus diseases.

(4) That it is propagated slowly from the point of infection downwards, thereby infecting shoots arising lower than the point of infection.

(5) That the rate of propagation and the intensity of the attack depends directly on the intensity of the original infection.

(6) That its propagation *can* be quite independent of the presence of Black Currant Mite.

STATISTICAL OBSERVATIONS.

The season 1924 has been remarkable for the large increase in the number of fresh cases of reversion. Statistical investigation of the disease, continued on a plantation of 547 bushes comprised of Hatton's four main groups, showed a percentage increase of approximately 7 per cent. in Baldwin (Strain I), 9 per cent. in Edina, 11 per cent. in Seabrook's Black, 13 per cent. in Boskoop Giant and 23 per cent. in Baldwin (Strain II). The results of the investigation are summarised in Table II and the percentages quoted above are calculated on the number of healthy bushes remaining in the various groups at the time of the last marking, namely the foliage marking in 1923.

As stated in a previous paper(5), up to 1923 the number of new cases of the disease was steadily decreasing and only four fresh cases, less than 1 per cent., were observed in that year.

TABLE II.

Variety.	Number of bushes 1920	Reverts.				Increase in number of Reverts.			Remaining healthy 1923	Percentage increase 1924
		1921	1922	1923	1924	1922	1923	1924		
Edina	115	28	26	25	33	3	1	8	90	8.9
Boskoop Giant	123	5	6	7	22	1	1	15	116	13.0
Seabrook's Black	134	6	8	10	24	2	2	14	124	11.2
Baldwin I	57	0	0	1	5	0	1	4	56	7.1
Baldwin II	118	4	7	7	32	3	0	25	111	22.5
Totals	547	38	47	50	116	9	5	66	497	13.27

The bushes were carefully marked in April and early May, according to variety, for the presence of the typical "revert inflorescence" and in June for signs of the disease exhibited by the terminal foliage(2). A total of 77 fresh infections resulted from the two markings, the total number of affected bushes being 66. The difference between these two figures may be accounted for by the fact that it is quite possible to find two twigs or branches on the same bush remotely connected through the stool and showing the presence of the disease in differing intensity and at different periods of the season, a condition which indicates separate infections.

Considering the flower markings made in April and May, of a total of 25 twigs and branches bearing revert inflorescences, 19 produced revert terminal foliage later in the season. Infection varied from a single truss in slight cases to all the trusses on a fruiting twig. The extent of the variation is shown in Table III.

TABLE III.

Summary of new infections.

Presence of reversion established on :-

	Flower mark only	Flower and Foliage marking.					Foliage marking only			
		Twig				Branch	Twig	Branch	Stool Shoots	
Variety.	One rev. truss N. foliage.	Isolated R. truss Terminal fol. R.	Upper trusses R. Terminal fol. R.	Lower trusses R. Terminal fol. R.	All trusses R. Term. fol. R.	Whole branch R. infs and fol.	Terminal foliage R.	Terminal foliage of main and laterals R.	and laterals arising near pruning cut	Totals.
Edina	1	0	2	1	2	0	0	2	0	8
Boskoop Giant	1	0	2	2	1	2	6	4	1	19
Seabrook's Black	0	0	0	0	1	1	10	1	3	16
Baldwin I	1	0	0	2	0	0	0	1	0	4
Baldwin II	3	1	0	1	0	1	11	6	7	30
Totals	6	1	4	6	4	4	27	14	11	77

Where only a single truss appeared to be infected, reversion in six cases did not appear later in the foliage. It will also be observed that four of the six cases occur in the Baldwin Group, where recognition of the disease in the inflorescence is much less easy than in the variety such as Boskoop or Seabrook.

The figures obtained on the foliage marking in June illustrate again the possibility of "dosage" or varying severity of infection. Of the total of 52 fresh cases of disease 27 are single twig infections where the terminal foliage in June shows the reduced venation and coarsened margin characteristic of the disease. More severe cases were noted where the terminal foliage on all the current year's growth of a branch was reverted. In addition to the above cases, instances of possible infection through a bad pruning wound were recorded. One case, in Seabrook's Black, showed very clearly the possibility of such an infection taking place. A strong stool shoot of the previous year which had been badly snagged had later in the season produced three strong laterals. Of these, two had arisen near the cut and were strongly revert, while the third, which had its origin at a considerably lower level, was quite normal (Fig. 4). This case seems to form a striking parallel to the case of the grafted plant (Figs. 1 and 2) in which the shoot arising nearest the point of infection by the revert scion has reverted before the shoot of more distant origin.

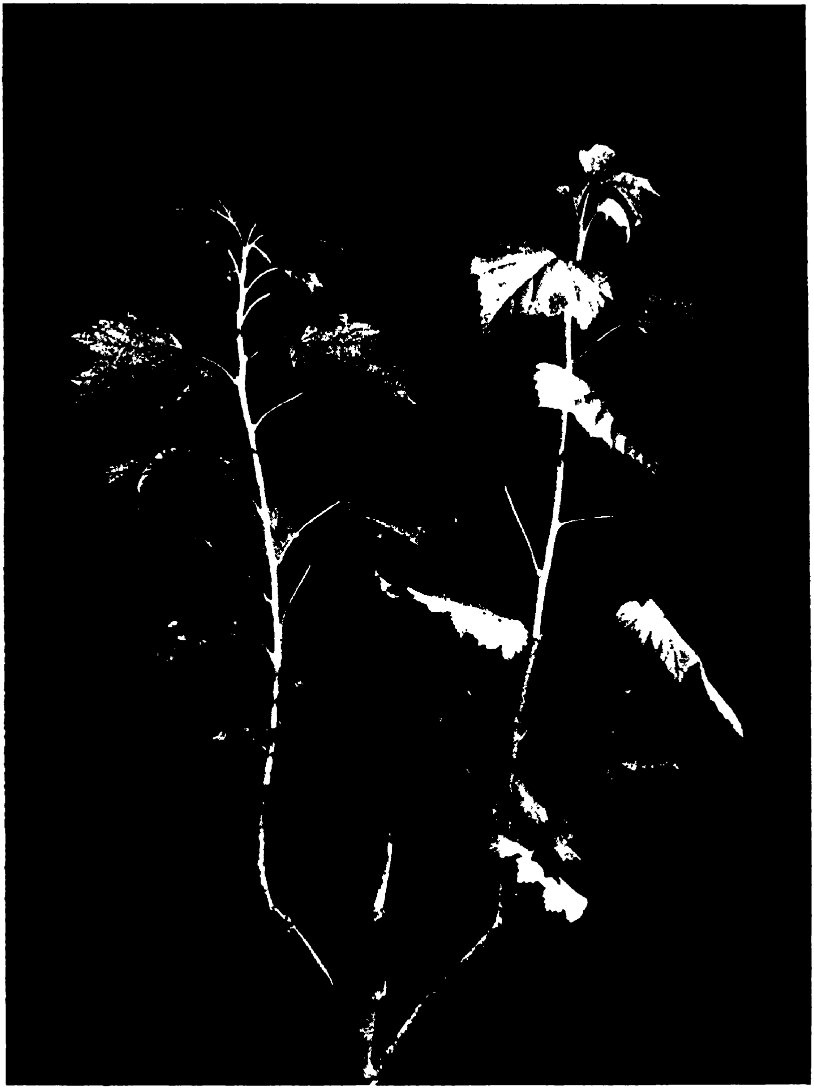

FIG. 1.

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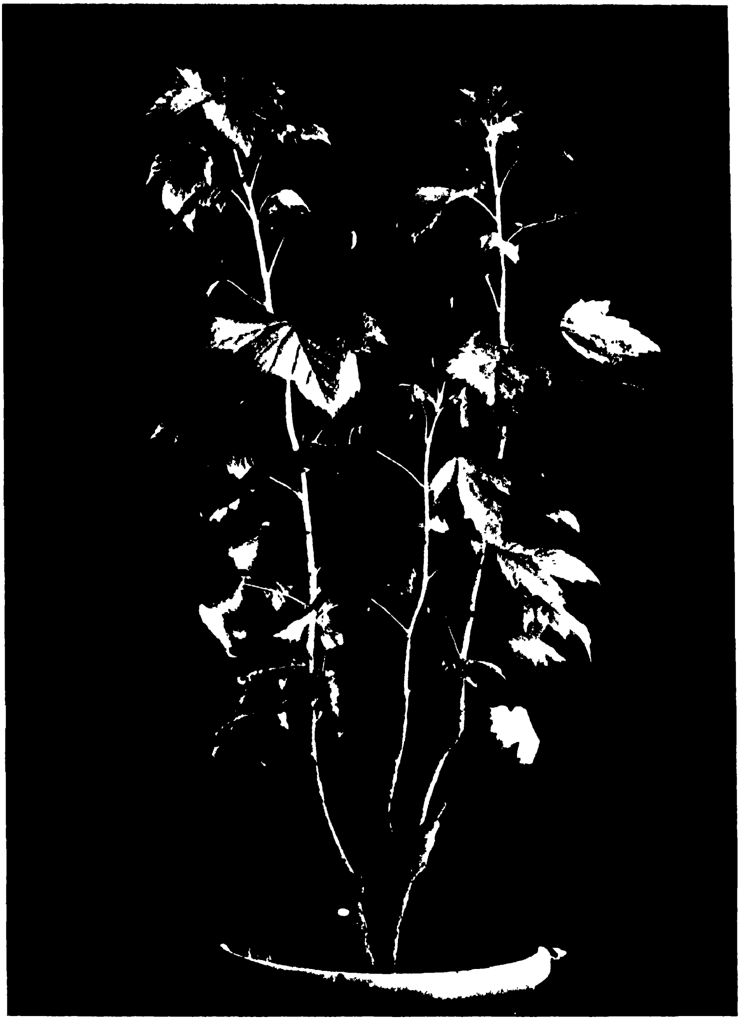

FIG. 2.

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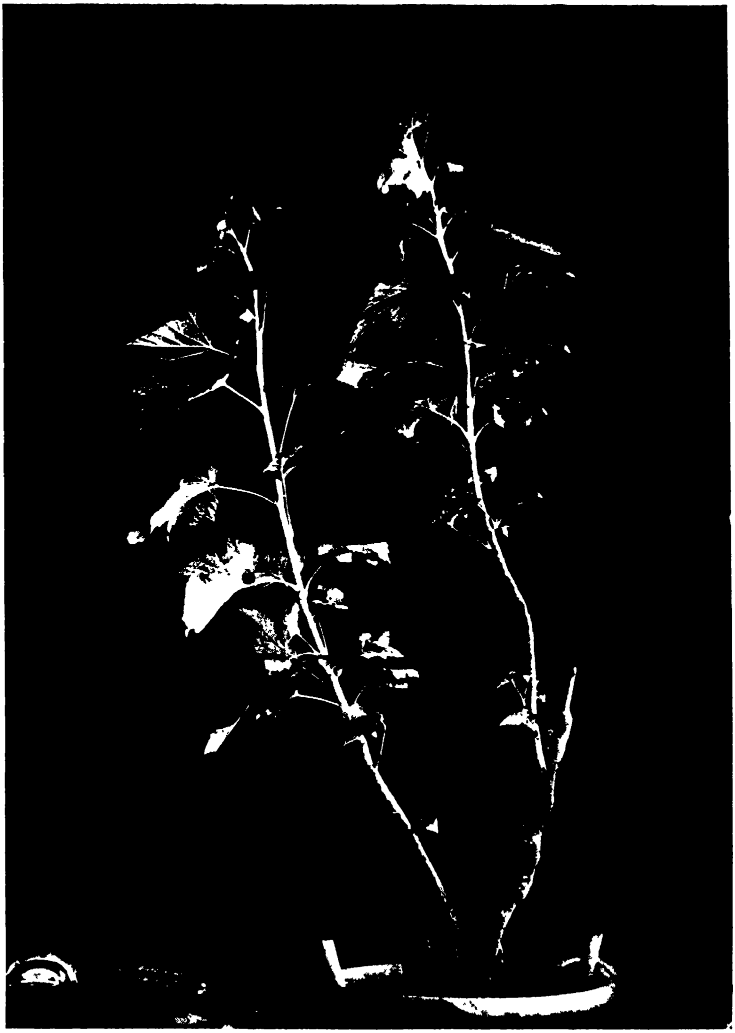

FIG. 3.

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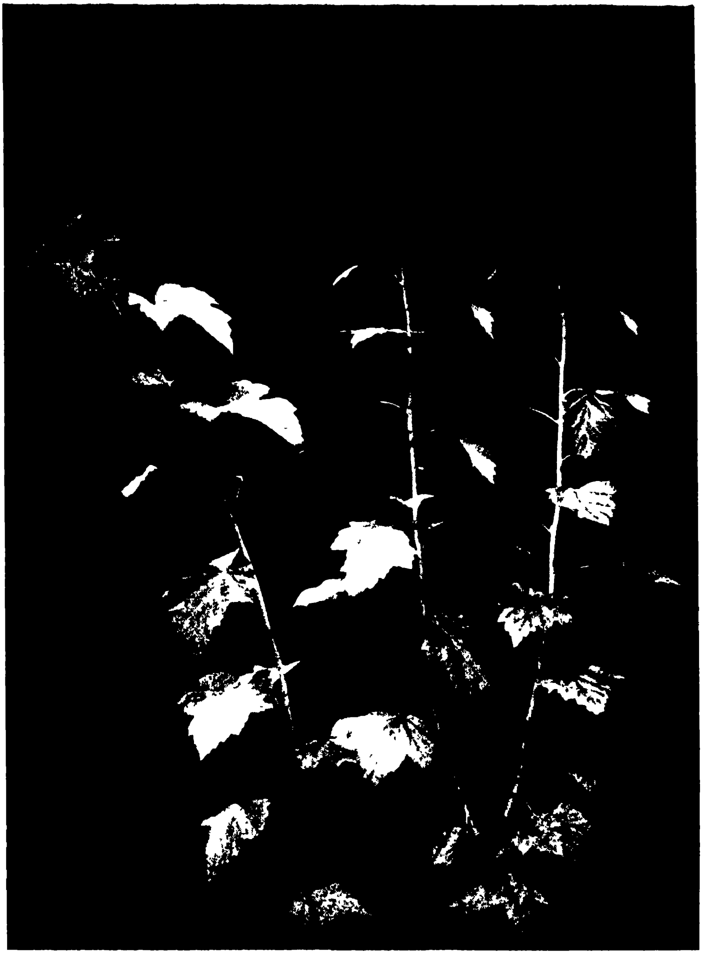

FIG. 4.

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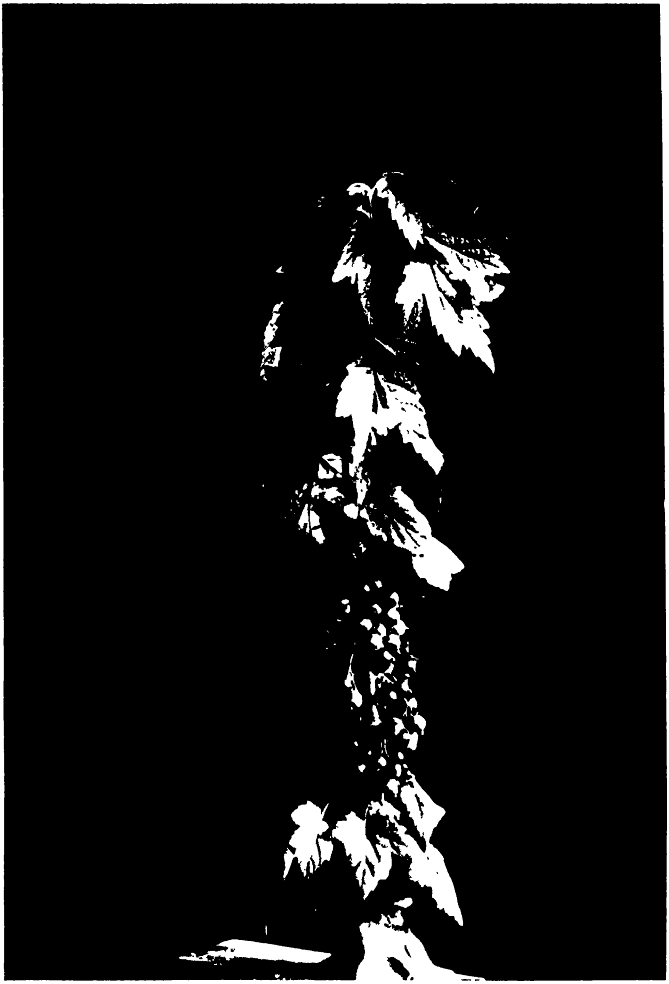

FIG. 5.
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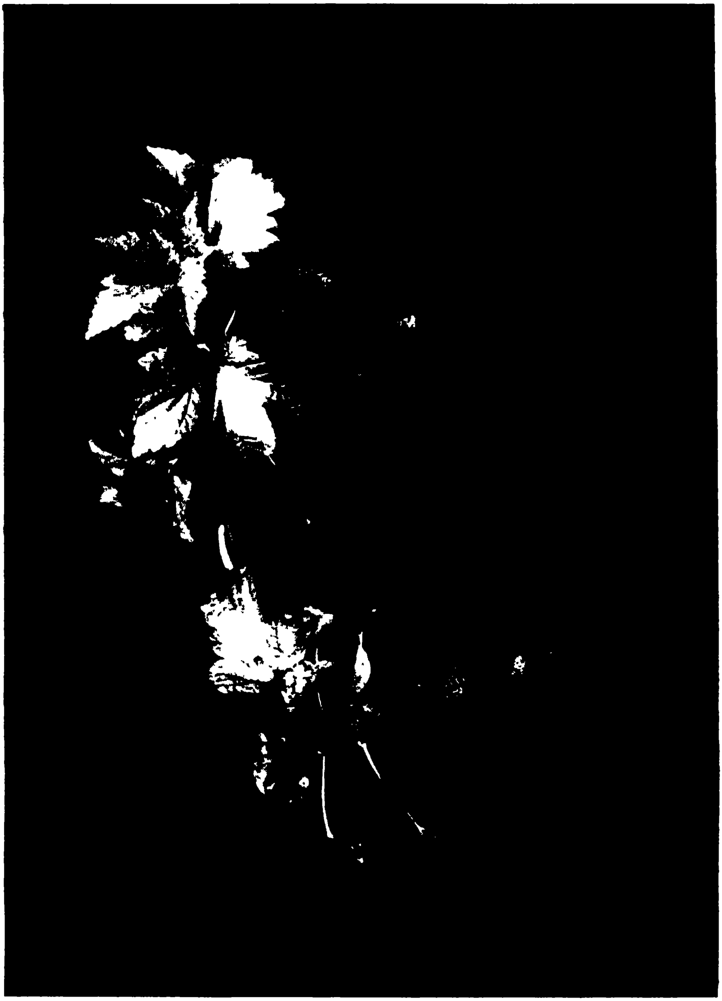

Fig. 6.

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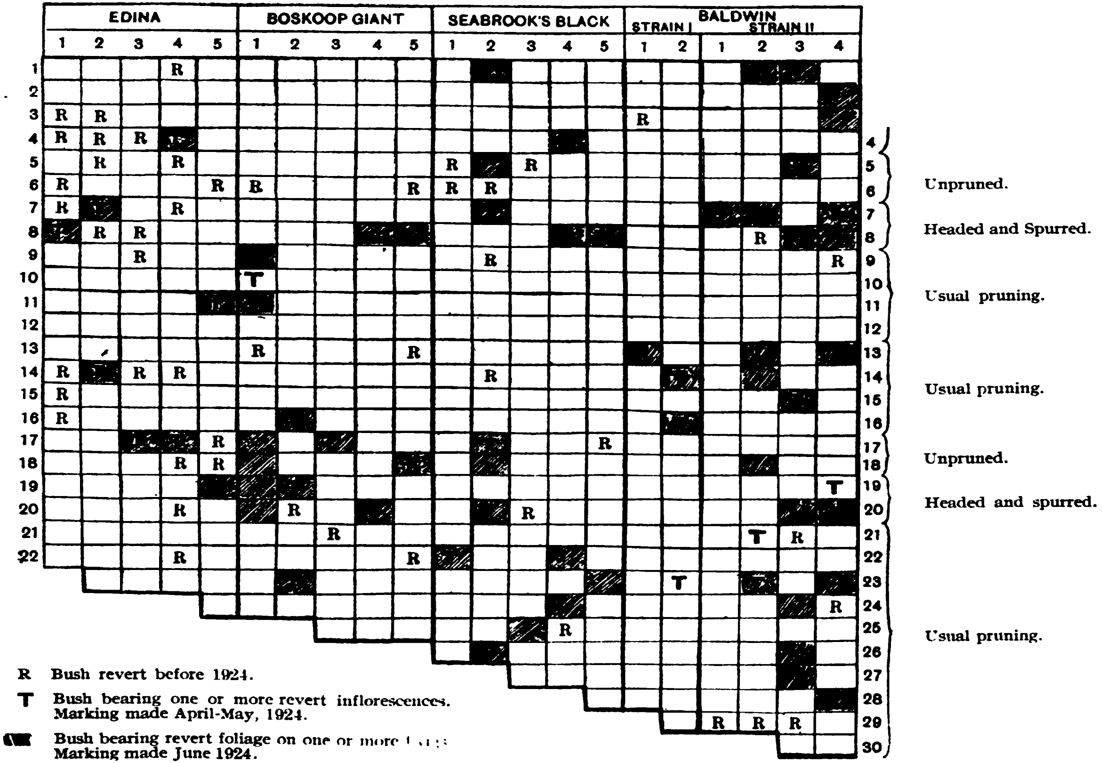

R Bush revert before 1924.

▇ Bush bearing one or more revert inflorescences. Marking made April-May, 1924.

▨ Bush bearing revert foliage on one or more [illegible] Marking made June 1924.

Fig. 1. Chart showing general lay out, treatments and results in the trial plantation.
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The subsequent behaviour of bushes marked for revert inflorescences is worthy of special note. In all cases where one or more trusses had been marked for reversion in April the June observations showed either a complete absence of fruit or the presence of a very few small unripened berries on the infected trusses. On the other hand, the June marking showed numerous cases of fruiting twigs and branches carrying a full crop but showing strongly revert terminal foliage on the current year's growth (Fig.5). It has been suggested that nursery beds may be started free from reversion disease by selecting cutting material only from fruiting bushes. The foregoing observations show that the chance of including revert material is not eliminated by this method and in actual practice usually results in the appearance of about 4 per cent. reverts in the nursery beds.

The relative distribution of previously reverted and newly infected bushes in the plantation is represented in text-fig. 1. An examination of the chart reveals no definite relation between old reverts and new infections; the distribution of the latter seems quite haphazard.

In the chart (text-fig.1) the pruning treatments applied are shown. In addition the first eight rows, including the three pruning methods employed, received a lime sulphur spray of 1 in 12 as soon as the leaves were as large as a sixpence. The next four rows received four sprayings of lime sulphur at 1 in 40 at intervals of ten days. From the thirteenth row the pruning treatments are repeated, but the bushes were not sprayed.

The results summarised in Table IV show firstly that lightly pruned bushes were more liable to reversion than were hard pruned bushes, secondly, that if spraying with lime sulphur had a beneficial effect, especially if the spray was applied at summer strength at four intervals of 10 days, but little benefit accrued from spraying unless the bushes received the usual pruning.

TABLE IV.

Spraying Treatment	Percentage new infections.			
	Rows	Hard pruned	Rows	Light pruned
Lime-sulphur 1 in 12	1-4	9.52	5-8	21.06
,, 1 in 40	9-12	3.22	--	—
Unsprayed	13-16	13.11	17-20	22.95
,,	21-end	13.46	—	—

During the season 1923 the plantation was badly attacked by aphis. From observations made at the time, aphis damage was much less severe on the bushes receiving four sprayings of lime sulphur than on any others. These observations would appear to suggest the possibility of aphis acting as a carrier of the disease, and would explain to some extent the haphazard distribution of new infections appearing in 1924. This suggestion is supported also by the evidence from grafting experiments, where it is shown that contact with revert material is sufficient for the propagation of the disease in a healthy plant. In the absence of direct evidence the effect of hard pruning in reducing the number of infections can only be surmised, but it may be possible by pruning to remove many mildly attacked shoots before the disease has reached the region where the pruning cut is made.

From the foregoing observations the following main conclusions may be drawn with regard to the new infections of reversion disease for 1924.

(1) Infection with the disease may vary in severity between wide limits.

(2) There is no evidence of occurrence of the disease solely on the ground of proximity of healthy and infected plants.

(3) The possibility of infection by contact with diseased material during the process of pruning is suggested.

(4) There is some evidence in support of the possibility of a pest carrier.

(5) Hard pruning with lime sulphur spraying had a considerable control influence.

To test the evidence obtained from observations in the plantation work has been commenced on the following lines:

I. Injection of the expressed fluid from a revert plant into various parts of a normal plant.

II. Ringing and subsequent introduction into the ringed healthy shoot of the extract from revert shoots.

III. Propagation of green cuttings from a healthy bush previously infected with the fluid obtained from corresponding regions of a revert bush.

IV. Attempted pruning cut infections in the field.

V. Hard wood healthy cuttings treated with extracts obtained from diseased plants.

POSSIBLE CARRIERS OF THE DISEASE.

It is clear, that amongst the cases described in the above section there are a large proportion which cannot be explained as infection by contact. Nevertheless, it is obvious that the disease has obtained entry by some means, since those bushes prior to 1924 were healthy.

Undoubtedly the easiest hypothesis to accept is that the disease can be carried by some sucking arthropod from diseased to healthy bush in the way that is already familiar in several virus diseases (Potato Aphis, *Eutettix tenella* and Curly Top of Sugar Beet, etc.).

At first sight, in view of the frequent close connection of mite with reversion, this arthropod might be expected to convey the infection. This connection is, however, explicable in two ways. Mite may cause or carry reversion or reverted bushes may be more susceptible to mite. That the latter contention is true has been shown by statistical studies already published(4). But this does not preclude the truth of the first contention. The evidence for this is at present conflicting and is derived from two sources, correlations in the field and direct infections. The correlations were derived from two varieties, Edina and Baldwin, now under observation for four years. In the group of Edinas under inspection there are 115 bushes and of these 40 have been recorded as big budded 1 year out of 4, 19 big budded 2 years out of 4, 5 big budded 3 years out of 4, and 1 big budded all four years and yet all have remained free from reversion for all four years referred to. It is therefore clearly possible for mite to be present for any period from one to four years, without the bush becoming revert. A lack of correlation is also shown in the Baldwin Group (Strain II) between mite infections recorded in 1923 and new cases of reversion appearing in 1924. Out of 111 bushes remaining healthy in 1923, as regards reversion, 25 showed the presence of the disease in 1924. On these figures the probability of a bush of this variety reverting in the past season was 25/111 or 22.5 per cent. Of the total of 111 bushes revert in 1923, 28 were found to be mite infected in December of that year, and of these 7 were revert in 1924. The probability of a mite attacked bush becoming revert is 7/28 or 25 per cent. These two figures for probability of infection indicate a very slightly higher probability in the case of mite infected bushes, but the difference between the two figures, namely 2.5 per cent., is much too small to be significant and is well within the limits of experimental error.

The evidence for mite producing or carrying reversion is derived from direct infection experiments. In Table V are shown the results obtained by infecting healthy pot plants with mite. There are six cases where an attempted infection produced reversion in the plant and three cases where Big Bud was produced, but no reversion, and six cases where no Big Bud and no reversion were produced. Thus where no Big Bud followed no reversion was obtained and from eight successful Big Bud infections, only five successful reversion infections followed; where reversion was produced in two cases it appeared in the same year, and in three cases in the following year. The numbers in this experiment are admittedly very small and certainly too much reliance must not be placed on them. They do appear to show, however, that a successful infection of Big Bud is followed by reversion, though not necessarily in the same year in which the Big Bud appears and certainly not usually in the year of mite infection. The contention is supported by a field trial where on 15 healthy Edinas 10 infections of mite were made. In the first year one of the bushes showed typical mite revert foliage (tomato leaf type, Pl. XIV, fig. 6.) The result has already been obtained by Massee at East Malling and in this respect this infection confirms his claim. The Long Ashton field infection trial will need to wait for a year or two more before conclusions can be drawn.

Summing up the evidence, it would appear that mite infection may produce reversion (either directly or by being a carrier) though there are many cases to be found where no reversion has followed the appearance of Big Bud. It is obvious that further work is necessary on these points, especially in respect of testing possible reversion carrying power of mite.

Whether subsequent experiments prove that mite does or does not carry reversion infection does not affect the possibility that arthropods other than mite may be carriers. Black currants are attacked commonly by two species of aphis and also fairly frequently by capsids.

TABLE V.

Relation of Mite Infection to the Production of Reversion.

	Big bud appeared in			Reversion appeared in			Reversion did not appear
No.	1st year	2nd year	3rd year	1st year	2nd year	3rd year	
5	.	×	.	.	.	×	.
8	×	.	.	.	.	×	.
10	.	.	×	.	.	×	.
11	×	.	.	.	×	.	.
29	×	.	.	×	.	.	.
30	.	.	.	×	.	.	.
37	×	.	.	.	.	.	×
38	.	×	.	.	.	.	×
43	×	.	.	.	.	.	×
6 cases did not appear			.	.	.	.	×

The case for aphis is suggestive. It is at least remarkable, as pointed out in that part of the paper dealing with statistical results, that a bad aphis year was followed by a sudden marked increase in the number of new reverts (1 per cent. new cases in 1923, 13 per cent. in 1924, in round figures). I am indebted to Mr. W. P. Seabrook for a similar observation bearing out this contention. In 1918 in his experience a bad attack of aphis was followed by a very marked increase of reversion. In a bad year the pest is never completely controlled and consequently winged parthogenetic females are produced in numbers. In a mild year by the time these are due to appear spraying and natural enemies have usually greatly reduced the number of parent aphids. Consequently but few winged forms appear. It is of course only winged forms that can convey disease from revert to healthy bush since the wingless ones do not move from bush to bush.

There is, however, as yet no direct proof, but it will be the aim of future experiments to test whether mite, capsids or aphis be carriers of the disease.

SUMMARY.

(1) This paper is a continuation of previous work on Reversion Disease of Black Currants, and deals more especially with the possible means of infection.

(2) Evidence is put forward showing that the disease can be propagated by contact of diseased material with healthy, either by grafting or by pruning with a contaminated pruning tool.

(3) The disease, after it has attained entry, is propagated slowly downwards.

(4) The rate at which it travels appears to depend on the intensity of the original infection, and there is some evidence to show that the intensity of the resulting disease is also similarly dependent.

(5) Propagation can be independent of Black Currant mite, *Eriophyes ribis.*

(6) There is no evidence of occurrence of the disease solely on the ground of proximity of healthy and infected plants.

(7) There is some evidence in support of the possibility of a pest carrier.

EXPLANATION OF PLATES.

Fig. 1. Effect of grafting revert graft on healthy black currant plant. The graft has died, but the shoot nearest graft has become revert, the other shoot being still healthy at the time of photographing.

Fig. 2. Ditto. Shoot nearest graft strongly revert, next shoot moderately revert, farthest shoot still healthy.

Fig. 3. As Fig. 1, but not quite so marked.

Fig. 4. Effect of pruning with contaminated knife. The two shoots behind the snag strongly revert, the shoot issuing lower down still healthy. This is a plantation bush and the effect was obtained accidentally.

Fig. 5. Shoot bearing heavy crop with revert foliage, showing that the infection took place too late to infect the flower buds.

Fig. 6. Effect of a heavy artificial infection of mite. The infected shoot has produced revert leaves of the tomato type.

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*THE PECTIN CONTENT OF NORMAL AND "SILVERED" APPLE LEAVES.**

(By Frank Tutin.)

During a recent investigation the observation was made that the young bark of the apple contained a very appreciable amount of pectin. The variety of apple examined was Bramley's Seedling. The bark, after mincing, was thoroughly extracted with boiling alcohol and then, after drying, with boiling water. The aqueous extracts, after concentration under diminished pressure, yielded, on precipitation with alcohol, a product which appeared to be essentially identical with the pectin obtained from apple fruit, with the exception that it contained a very small amount of starch. On treatment with alkali it gave methyl alcohol and acetone and on treating its aqueous solution with the enzyme, pectase, a good gel was soon formed, although not quite so quickly as was the case when employing pectin obtained from the fruit.

This discovery of pectin in the young bark suggested that apple leaves might also contain this substance. A quantity of apple leaves was therefore examined for pectin in a manner similar to that employed when investigating the bark. A good yield of pectin was then obtained, but it was not quite so pure as that derived from the bark since it contained rather more starch and did not gel so quickly with pectase.

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* Reprinted from the Biochemical Journal, 1925, xix, 414.

It was observed, however, that while the leaf fragments, which had been previously exhausted with boiling alcohol, were being deprived of pectin by means of boiling water they developed a silvery appearance precisely resembling that shown by leaves affected by the well-known " Silver Leaf " disease. The possibility of " Silver Leaf " being associated with pectin deficiency was therefore investigated.

As is well known, " Silver Leaf " is a disease particularly affecting plum trees, but other trees, including the apple, may also become infected by it. Leaves of the last mentioned were chosen for the present investigation since material particularly well adapted for this purpose was readily available, and, moreover, the results so obtained would be comparable with the observations already made, which are recorded above.

The tree chosen was an espalier apple of the " Keswick Codlin " variety, the upper branch on one side of which only was affected with " Silver Leaf " disease. On the morning of July 22nd 40 average leaves, without stalks, were collected from near the end of the diseased branch, and a like number from a similar position on the corresponding branch on the other side of the tree, which was perfectly normal. After weighing, each sample of leaves was cut into narrow strips and thrown into boiling alcohol. After boiling for 15 minutes the extractions were completed in a Soxhlet apparatus with fresh quantities of alcohol. After drying and weighing the material which had been exhausted with alcohol, each sample was extracted a number of times by boiling with large volumes of distilled water for the removal of the pectin. The latter, after concentration of the extracts under diminished pressure, was precipitated by means of alcohol, collected, dried and weighed. The results obtained are given below :

	Original weight of 40 leaves g.	Weight of alcohol-extracted marc g.	Weight of pectin g.	% of pectin in alcohol extracted marc.
Normal leaves	35.15	7.70	1.30	16.89
" Silvered " leaves	29.70	6.50	0.97	14.90

It is thus seen that the leaves affected by " Silver Leaf " disease contain an appreciably smaller amount of pectin than do the normal leaves. Moreover, the yield of pectin calculated on the weight of the fresh, normal leaves (3.7%) seems surprisingly large when compared with the proportion of this substance found by the present author [1921, 1923] to occur in the peel and pulp of the fresh fruit, namely, 2.6 and 1.3% respectively. The pectin obtained from the leaves, however, is not so pure as that prepared from the fruit, but the amount of impurity present certainly does not seem sufficient to account for the increased yield obtained from the leaves as compared with that from the fruit.

Although the presence of pectin in apple leaves does not appear previously to have been recorded, it is known that they contain the enzyme, pectase. Thus, if fresh apple leaves be well pounded with a little water and the resulting mass strongly pressed, the juice so obtained, if added to a solution of pectin in the presence of chalk, causes the formation of a solid gel of calcium pectate. The expressed juice of the leaves appears, however, to contain little, if any, pectin.

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CHEMICAL INVESTIGATIONS OF FRUITS AND THEIR PRODUCTS.

*I. Apple Juice as a Source of Sorbitol.**

(*By Frank Tutin.*)

The material generally employed as a source of the hexahydric alcohol, sorbitol, namely, the berries of the Mountain Ash (*Pyrus aucuparia*, Gaertn.), is not always readily obtainable, even at the appropriate season of the year. Moreover, in the author's experience it is by no means always an easy matter to isolate sorbitol from this source. During an investigation on the constituents of apples it has been found that they contain an appreciable proportion of sorbitol and, since apples are always obtainable and the isolation of sorbitol from them may easily be accomplished, it would appear that this fruit affords the most convenient source for the compound in question. The method employed for the isolation of sorbitol from apples is briefly as follows.

The apple juice was first concentrated under diminished pressure to about one-third its volume. A slight excess of basic lead acetate solution was then added and the resulting precipitate removed by filtration. The filtrate, after being deprived of lead by means of hydrogen sulphide, and the excess of the latter removed, was fermented with yeast in an incubator until the evolution of carbon dioxide has apparently ceased.[1] The mixture was then considerably concentrated under diminished pressure and again treated with basic lead acetate as previously described, after which the filtrate, which was now much diminished in volume, was again fermented, as it was found that an appreciable amount of sugar always remained after the first fermentation was apparently complete. A final clearing with lead was then employed and the filtrate, after being deprived of lead, was evaporated as far as possible under diminished pressure.

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* **Reprinted from the Biochemical Journal, 1925, xix, 416.**

The gum-like residue so obtained was then covered with an excess of acetic anhydride, some pyridine added as a catalyst, and the mixture cautiously warmed on a water-bath, when acetylation occurred rapidly after the temperature had been somewhat raised. When the first vigorous reaction was over the mixture was kept boiling for 1 hour to ensure complete acetylation, after which it was cooled to about 50° and water cautiously added to decompose the excess of acetic anhydride present. Finally, a considerable excess of water was added and the mixture extracted several times with ether. The combined ethereal extracts were washed several times with water and then extracted successively with aqueous sodium carbonate and sodium hydroxide, after which they were again washed with water, and dried. During the extraction with alkalis and the final washing with water appreciable amounts of brown resinous products were removed. On evaporating nearly all of the solvent from the purified ethereal extract a pale yellow residue was obtained, which soon crystallised in aggregates of hard, colourless prisms. The latter were deprived of adhering, pale yellow, viscid material by draining on a porous tile in an atmosphere saturated with ether. After recrystallisation from ethyl acetate colourless prisms melting sharply at 99° were obtained, and were identified as hexa-acetylsorbitol. In *Richter's Lexicon* the latter compound is described as a syrup, on the authority of Vincent and Delachanal [1889] but Thorpe [1912] gives the melting point as 99°, in accordance with the value found by the present author. Hexa-acetylsorbitol is readily soluble in alcohol, moderately so in ethyl acetate and rather sparingly soluble in ether. It dissolves slightly in boiling water.

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[1] The addition of some "yeast water" and a little ammonium phosphate greatly accelerates the fermentation.

For the regeneration of sorbitol 2% aqueous sulphuric acid was added to a quantity of the above-described hexa-acetyl derivative and the mixture boiled in a flask attached to a reflux condenser until solution was complete. Steam was then passed through the mixture until acetic acid was no longer removed, after which the sulphuric acid was exactly precipitated by the addition of aqueous baryta, and the filtrate from the barium sulphate evaporated to dryness under diminished pressure. The residue so obtained was dissolved in alcohol from which it slowly separated in colourless crystals which, after drying, melted at 110°, and were identified as *d*-sorbitol.

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CHEMICAL INVESTIGATIONS OF FRUITS AND THEIR PRODUCTS.

II. The Fate of Sugar during "Cider Sickness."[*]

(By Frank Tutin.)

The disease known as "Cider Sickness" or "Second Fermentation" is, amongst all the disorders to which cider is liable, the most dreaded by cider makers in this country. It has been much studied by Barker [1906, 1907, 1911, 1912, 1, 2] who has shown that it is caused by a specific organism which attacks chiefly sweet ciders of low acidity when the temperature becomes somewhat raised. It causes a very rapid disappearance of the sugar, together with the formation of alcohol, acetaldhyde, formaldehyde, carbon dioxide, and hydrogen. He also obtained conclusive evidence that part of the sugar was converted into some non-reducing substance, which could not then be isolated nor its nature ascertained.

Since the acetylation method described in the preceding paper had proved so convenient for the isolation of sorbitol from apple juice it was decided to employ it for the investigation of the non-reducing substances present in "sick" cider. A quantity of the latter in which the "sickness" fermentation had been allowed to proceed to the ultimate limit was therefore concentrated under diminished pressure, purified by means of basic lead acetate, and the solids contained in the filtrate acetylated in the manner described in the foregoing paper. The resulting acetylated material, after purification in the manner employed when isolating the hexa-acetylsorbitol (preceding paper, p. 258), was obtained in noticeably greater yield than the corresponding product from the fresh juice. It could not, however, be induced to crystallise either by long keeping or by inoculating with a crystal of hexa-acetylsorbitol. When, however, a small particle of hexa-acetyl-*d*-mannitol was introduced crystallisation commenced and, during the course of some weeks, gradually spread throughout the viscid mass, but the proportion of crystalline material deposited was not large. The very viscid mixture was then brought on to a porous tile and allowed to drain in an atmosphere saturated with alcohol vapour. The white solid so obtained, after one crystallisation from alcohol, melted at 123° and was identified as hexa-acetyl-*d*-mannitol. A small amount of hexa-acetylsorbitol was subsequently isolated from the viscid material which had been absorbed by the tile.

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[*] Reprinted from the Biochemical Journal, 1925, xix, 418.

Since no mannitol could be detected in apple juice after fermentation with yeast only, it appears evident that fermentation by the " sickness " bacillus results in the reduction of a portion of the sugar present to mannitol, a change which is known to be brought about by certain other bacteria and which is in harmony with the observation of Barker that hydrogen is evolved during " sickness " fermentation.

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CIDER-MAKING TRIALS FOR THE SEASON 1924–25.

By O. Grove.

The 1924 crop of cider apples was very small. This is perhaps best illustrated by the fact that according to French official figures, over 24,000 tons of French cider apples were imported during the season for cider making.

Although the average specific gravity of all the juices expressed at Long Ashton was rather on the low side, namely, 1.0483, the ciders were, upon the whole, of good quality. On the Tasting Day, in May, 1925, they were judged as one of the best collections ever exhibited.

Washing of Apples.

The fact that for the first time all the apples were washed before being milled, had without doubt, something to do with the good flavour of the ciders made. Hitherto, it had been the practice at the Institute only to wash apples that did not arrive in a clean condition, washing being considered unnecessary in other cases. It was, therefore, something of a revelation to see the large amount of foreign matter collected in the bottom of the washing tank after a day's washing of apparently clean apples, an amount more than sufficient to convince the most sceptical of the desirability of washing. From another point of view the washing proved very beneficial ; the filtration of the ciders was carried out with much more ease than usual. This was a not unexpected result after seeing the amount of debris washed away before pressing and thus prevented from being carried with the juice to block up the filtering material.

The washing was carried out by a very simple contrivance. The washing vessel was a wooden vat of the following dimensions :—6 feet long by 3 feet wide and 1½ feet deep. This was kept filled with running water. This vessel was separated lengthwise into two compartments for about half its length by a wooden partition, on the one side of which the apples were pulled up a sloping board to an elevator by means of a wooden rake (a piece of perforated wood with a long handle). On the other side of the partition the apples were fed into the trough, so they had to travel through the water in the container along one side and around the partition before reaching the sloping board aforementioned. A sprinkler was arranged above the place where the apples passed from this to the elevator, so that they were rinsed with clean water just before going into the mill. The level of the water in the vat was kept constant by means of an overflow placed one foot above the bottom. Besides washing the apples this arrangement also had the advantage that it eliminated all badly decayed apples, since, being heavier than water, they sink to the bottom of the vat, whereas, the sound apples floated. Stones were eliminated in the same way. Such a washing arrangement can easily be made at home by a farmer or cider maker at very little cost.

Pasteurisation Trials.

As will be seen in the list of ciders given below, some of the juices were pasteurised immediately after pressing and subsequently fermented with a pure yeast. The pasteurisation was carried out by means of a new type of pasteurising apparatus of French design and manufacture. This apparatus consists of two sections, the pre-heater and the pasteuriser proper. The pre-heater, into which the juice is first passed by means of a pump or by gravity, consists of a set of cylinders made of tinned copper, uniform in height but of different diameters. These cylinders are fitted one into the other in such a way that there is a space of about one-third of an inch between the wall of one cylinder and the wall of the next. The whole system forms a set of covered, narrow, cylindrical canals, about 8 inches high, through which the juice flows. The cold juice entering and the warm juice discharged from the pasteuriser pass through an alternating set of canals, so that the cold juice cools the warm, which at the same time raises the temperature of the former. By this arrangement of temperature exchange, the pasteurised juice leaves the apparatus cold, whereas the cold juice has already been partly heated before it reaches the pasteuriser. From this pre-heater the juice passes into the pasteuriser, which consists of a coil of tinned copper-tubing, about 2 inches in diameter, through which the juice flows. This coil is placed in a closed metal container filled with water, which is heated by a small steam pipe. Before starting the pasteurisation the whole apparatus is sterilised by blowing steam through it, and the delivery tube through which the pasteurised juice flows to the receiving cask, the latter also being disinfected and steamed immediately before it receives the juice.

The process is begun by heating the water in the container to boiling point, and the juice is then pumped slowly through the whole apparatus. At the point where the juice leaves the pasteuriser and enters the temperature-exchanger, a thermometer is situated, this being the point where the highest temperature is reached. By regulating the steam supply and the rate of pumping, the thermometer can be maintained at a temperature of 70° C. (158° Fah.), this being the required degree for pasteurisation. The apparatus used at the Institute pasteurises about 100 gallons per hour. Owing to the ingenious temperature-exchanger, very little steam is needed to keep the thermometer at 70° C.

By this treatment all the micro-organisms in the juice are stated to be killed. This claim was tested by taking samples at intervals and placing them in an incubator at 25° C.; no development of micro-organisms took place. Hence the efficiency of pasteurisation by this machine can be accepted as proved. After pasteurisation of the juice it was inoculated with a culture of yeast, which had previously been grown in a Pasteur flask, using as medium one litre of sterilised apple juice. Such a culture was found quite sufficient to start the fermentation in a cask containing 100-116 gallons of juice.

In considering the value of this process for cider making, there are both advantages and disadvantages which have to be taken into account. In cider making as it is generally carried out, the juice is put into a cask or vat and left to ferment spontaneously, the fermentation being carried out by the yeasts present in the juice. In this case, there is one factor, namely, the juice, about which the essential points can be quickly ascertained by analysis. Besides this, there are a larger or smaller number of uncertain factors, namely, the numerous and diverse micro-organisms in the juice, some useful for our purpose, some indifferent, and some such as acetic bacteria, bacteria causing ropiness, cider- sickness, etc., very harmful.

If all the micro-organisms in the juice are killed by pasteurisation and the fermentation is effected with a selected type of yeast, there are then two known factors to work with instead of one known and a great number of unknown ones. It goes without saying, that this is a great advantage. As regards the type of yeast to use, there is a large selection of pure yeast types which have been isolated from cider, various wines and other fermented beverages to choose from, and it is only a question of experiments to select the type that suits the purpose best. The type of yeast wanted in cider, is one that gives a slow fermentation, a good and rapid clearing of the juice, settles down with a hard deposit, and, last, but not least, that communicates a good flavour to the cider.

During the season several yeasts have been tried at the Institute, and it has been found that the Institute yeast No. 6 gave the best results. This yeast was isolated from a Kingston Black cider in 1913. It gives a good clarification of the juice—very superior to the clearing in the control samples fermented naturally : it settles down well in the bottles ; and it was judged by experts on the Tasting Day to yield the best flavoured cider.

During the 1925-26 season a number of new yeasts are being experimented with. It is clear that when the best type of yeast has been selected and juices always fermented with it, an important step towards a more standardised product will have been taken.

In all cases in the 1924-25 trials where the juices were pasteurised, the fermentation proceeded very slowly, compared with the naturally fermented control samples. This can be seen in Table I. appended.

TABLE I.

Rates of Fermentation of Pasteurised Juices as Compared with the Unpasteurised Control Sample.

	Original Specific Gravity	Specific gravity after : 1	2	3	4	5	6	7	8	9	10	11	12 weeks
35 (control, fermented naturally)	1.046	1.041	1.035	1.028	1.025								
36(pasteurised, fermented with yeast No. 6)	1.046	1.044	1.039	1.037	1.034	1.031	1.029	1.026					
37 (,, fermented with yeast No. 37)	1.046	1.044	1.040	1.037	1.034	1.031	1.030.	1.027					
43 (control, fermented naturally)	1.046	1.042	1.040	1.034	1.030	1.028	1.024						
44(pasteurised, fermented with yeast No. 6)	1.046	1.042	1.037	1.037	1.036	1.035	1.035	1.034	1.033	1.032	1.030	1.028	1.026
45 (,, fermented with yeast No. 9)	1.046	1.043	1.039	1.038	1.038	1.037	1.036	1.035	1.033	1.032	1.031	1.029	1.026
46 (,, fermented with yeast No. 37)	1.046	1.043	1.038	1.038	1.038	1.037	1.037	1.035	1.034	1.032	1.030	1.027	1.025

It will be seen that in the first lot the control cask, No. 35, fermented down to a specific gravity of 1.025 in four weeks, whereas No. 36 and No. 37 took seven weeks to ferment down to a specific gravity of 1.026 and 1.027 respectively. In the second lot the control, No. 43, reached a specific gravity of 1.024 in six weeks, but the pasteurised samples took twelve weeks to ferment down to specific gravities of 1.026 in the case of Nos. 44 and 45 and to 1.025 in the case of No. 46.

The time taken for the fermentation to reach a certain specific gravity was thus, as a rule, four to six weeks more in the case of the pasteurised samples than in the case of the naturally fermented control. This is obviously a great advantage, as it allows racking and filtering to be spread over a much longer time, so that the usual rush to get these operations carried out in time is obviated. The reasons for this slowing down of the rate of fermentation are several, probably the most important being that some of the nitrogenous material, which serves as a food for the yeast, is coagulated by the heat and made less available for the yeast.

The destroying of such harmful organisms as acetic bacteria, ropiness and sickness bacteria, etc., is also clearly a great advantage. In the case of acetic bacteria it is true that they are so common, that an infection from the air after the fermentation is possible, but the untold millions of them always present in the fresh juice and ready for action as soon as the fermentation slows down, are made harmless by pasteurisation. As regards the special disease organisms of cider, it is most unlikely that infections from the air occur, so the two common and very serious disorders in cider, sickness and ropiness, are eliminated by the pasteurisation process.

The possible disadvantages of the pasteurisation are two: (*a*) adverse influence of the heating of the juice upon the flavour of the cider; and (*b*) the cost of the treatment. As regards the action on the flavour, if the juice is heated under the conditions described above, it can be claimed that there is no conspicuous effect. Many comparisons between the flavour of the freshly pasteurised juices and the ciders made from them and the unpasteurised juices and the control ciders have been made, and it has not been possible to detect any " cooked " flavour. The only difference so far noted is that the pasteurised material lacks a certain freshness of flavour, which is characteristic of the untreated liquor. This point is difficult to detect unless the ciders are compared side by side and is normally missed by the uninitiated sampler. As regards the cost, exact figures cannot be given, but it can be said to be very low, as very little steam is used because of the pre-heating arrangement described above.

Single Variety Trials.

With regard to the single varieties described in the appended list, No. 1 was an unnamed apple from Kingsweston, Somerset, which has not previously been tried for cider. The trees are good growers and croppers, and although the juice was low in specific gravity, the cider was good, with a clean sharp flavour, very useful for blending with lower acid varieties. Nos. 2 and 3 were good samples of these two well known varieties. The Kingston Blacks, Nos. 4-9 were very good samples, Nos. 7, 8 and 9 being the best ; the latter particularly was an excellent cider. No 10 was made from apples grown at the Research Station ; they produced a very useful sweet cider. No. 11 was a very good sample of this well known Devon variety.

The next five on the list, Nos. 12-16, were made from French apples imported from Normandy. They were good ciders with a remarkable soft and pleasant flavour and similar in character. No. 12, Bedan, was the best. This apple is one of the best known cider varieties in France. All the samples of these five French varieties kept well in bottle until the beginning of the summer, when cider-sickness started in Nos. 14, 15 and 16. This was more or less expected, as they all belong to a class of apples with low acidity juices, which are very liable to be attacked by this disorder. Besides the single variety samples, several lots of mixed French apples from the Vallee d'Auge in Normandy were made up during the season. Typical for all the juices made from these apples was a lower acidity (0.16 to 0.30 per cent. of the malic acid) than usually present in English mixed apples and in many cases a high tannin content. The specific gravities of the juices were rather low, about 1.046. Although the ciders made from mixed French apples were very fair in flavour, they lacked briskness because of the low acidity and were in many cases too bitter, owing to the high tannin contents. The ciders showed a tendency to darkening of the colour when exposed to the air for a short time. The best results were obtained when these ciders were blended with English ciders made from sharper varieties.

No. 17, Mansell Seedling, gave a juice with a low specific gravity; the cider was very fair without much character. Nos. 18, 19 and

20 were quite good samples of bitter-sweet ciders ; the Royal Wilding was the best.

Of the culinary varieties No. 23 was the pick of the Worcester Pearmains and No. 27 the best of the Bramley Seedlings. Both of these were produced from trees growing in an orchard in a very low state of culture ; consequently, the juices gave a very desirable slow rate of fermentation, due to low contents of nitrogen. As a rule the juices from culinary apples have a relatively high content of nitrogen, with a rapid rate of fermentation, which makes it difficult to make the popular sweet type of cider from them.

The perries Nos. 28-30 were of fair quality. No. 29 was specially good for the variety, which is not one of the best perry pears.

The four lots of mixed apples, Nos. 31-34, all produced very acceptable ciders. No. 32 had a rather high content of tannin and was consequently rather bitter in flavour.

As regards the ciders made from pasteurised juices, Nos. 35, 36 and 37 did not show great differences in character. No. 36, fermented with pure yeast No. 6, originally isolated from a Kingston Black cider, had the best flavour. No. 37 had a wine-like aroma and was fermented with yeast No. 37, isolated from a Rhenish wine. No. 39 was judged to be superior to the control ; it was fermented with yeast No. 9, isolated from a Sweet Alford cider. In the next two lots, Nos. 40-42 and Nos. 43-46 the samples fermented with yeast No. 6 were decidedly superior to the other samples. This was especially pronounced in the case of No. 44, which was well above the control, No 43, and better than the samples No. 45 and No. 46.

TABLE II.

Analytical and other Data of the 1924-25 Ciders.

No.	Name of Variety.	District where grown.	Date of making.	Specific Gravity of Fresh Juice.	Malic Acid per cent.	Tannin per cent	Rate of fermentation at 25° C.	Date of Filtering.	Specific Gravity May, 1925
	APPLES—								
	SHARP VARIETIES—								
1	Red Apple	Kingweston, Som.	2/12/24	1.043	0.80	0.19	6.4	10/1/25	1.013
2	Dymock Red	Dymock, Glos.	20/10/24	1.044	0.59	0.27	3.4	24/11/24	1.027
3	Fox Whelp	Credenhill, Her.	7/11/24	1.054	0.90	0.35	2.2	15/12/24	1.035
4	Kingston Black	Dymock, Glos.	6/11/24	1.058	0.72	0.22	2.0	29/12/24	1.025
5	,, ,,	Kingweston, Som.	20/10/24	1.058	0.75	0.24	4.7	8/12/24	1.026
6	,, ,,	Moorhampton, Her.	20/11/24	1.048	0.58	0.16	3.1	5/1/25	1.026
7	,, ,,	Taunton, Som.	6/11/24	1.058	0.71	0.21	2.0	10.1.25	1.027
8	,, ,,	Credenhill, Her.	6/11/24	1.055	0.64	0.18	1.7	19.1.25	1.030
9	,, ,,	Kittisford, Som.	13/11/24	1.056	0.60	0.22	1.3	26/1/25	1.037
	SWEET VARIETIES—								
10	Sweet Alford	Long Ashton, Som.	22/10/24	1.040	0.26	0.16	5.0	5/11/24	1.024
11	Woodbine	Kittisford, Som.	17/11/24	1.048	0.32	0.22	5.2	15/12/24	1.025
12	Bedan	Normandy, France	9/1/25	1.052	0.16	0.15	3.2	16/2/25	1.026
13	Bouteille	,, ,,	9/1/25	1.044	0.16	0.15	4.2	16/2/25	1.026
	BITTER SWEET VARIETIES—								
14	Cimetière	Normandy, France	28/10/24	1.046	0.16	0.28	8.5	19/1/25	1.022
15	Matois Blanc	,, ,,	28/10/24	1.047	0.25	0.25	3.1	19/1/25	1.023
16	Bisquet	,, ,,	28/10/24	1.044	0.28	0.26	9.2	8/12/24	1.023
17	Mansel Seedling	Byford, Her.	19/12/24	1.043	0.26	0.27	4.1	19/1/25	1.022
18	White Norman	Moorhampton, Her.	20/10/24	1.050	0.38	0.24	6.6	1/12/24	1.024
19	Devon Bittersweet	Dymock, Glos.	19/11/24	1.057	0.29	0.32	6.8	15/12/24	1.024
20	Royal Wilding	Nunnington, Her.	19/11/24	1.054	0.25	0.33	5.8	15/12/24	1.025
	CULINARY VARIETIES—								
21	Worcester Pearmain	Putley, Ledbury, Her.	27/9/24	1.066	0.68	0.19	12.2	13/10/24	1.009
22	,, ,,	Glewstone, Ross, Her.	3/10/24	1.049	0.53	0.13	10.7	13/10/24	1.010
23	,, ,,	Hownhall, Ross, Her.	25/9/24	1.067	0.68	0.16	5.7	8/12/24	1.028
24	Bramley's Seedling	Ledbury, Her.	4/12/24	1.036	0.88	0.12	9.3	15/12/24	1.019
25	,, ,,	Stockton, Worcester	4/12/24	1.037	0.82	0.15	7.6	15/12/24	1.023
26	,, ,,	Glewstone, Ross, Her.	19/12/24	1.040	0.80	0.12	7.0	29/12/24	1.025
27	,, ,,	Hownhall, Ross, Her.	4/12/24	1.041	0.93	0.15	2.1	20/12/24	1.031

	PERRIES—								
28	Mixed Pears	Long Ashton, Som.	25/9/24	1.042	0.37	0.08	6.5	13/10/24	1.017
29	Blakeney Red	Dymock, Glos.	22/10 24	1.041	0.46	0.22	3.0	15/12/24	1.026
30	Mixed Pears	Dymock, Glos.	10/10/24	1.045	0.53	0.19	4.7	13/10/24	1.027
	MIXED FRUIT—								
31	Mixed Apples	Kenn & Kingweston, Som.	7/11/24	1.046	0.44	0.22	6.5	24/11/24	1.019
32	,, ,,	Martock, Som.	26/11/24	1.050	0.42	0.34	6.4	15/12/24	1.021
33	,, ,,	Hereford	19/11/24	1.050	0.64	0.21	4.2	9/12/24	1.026
34	,, ,,	Normandy, France	30/10/24	1.046	0.22	0.27	4.6	15/12/24	1.026
	CIDERS made from Juices pasteurised at 160° F. and fermented with pure Yeasts.								
*35	Mixed Apples, No. 5	Normandy, France	19/12/24	1.046	0.29	0.24	4.0	19/1/25	1.024
*36	,, ,, ,,	,, ,,	19/12/24	1.046	0.29	0.24	4.0	23/2/25	1.024
*37	,, ,, ,,	,, ,,	19/12/24	1.046	0.29	0.24	4.0	23.2.25	1.026
*38	Mixed Apples, No. 6	,, ,,	22/1/25	1.042	0.21	0.17	4.0	23/2/25	1.025
*39	,, ,, ,,	,, ,,	22/1/25	1.042	0.21	0.17	4.0	16/2/25	1.026
*40	Mixed Apples ,,	Kingweston, Som.	2/12/24	1.045	0.38	0.35	4.8	2/2/25	1.026
*41	,, ,, ,,	,, ,,	2/12/24	1.045	0.38	0.35	4.8	2/2/25	1.026
*42	,, ,, ,,	,, ,,	2/12/24	1.045	0.38	0.35	4.8	2/2/25	1.025
*43	Mixed Apples	Kittisford, Som.	9/12/24	1.046	0.30	0.20	4.0	19/1/25	1.023
*44	,, ,,	,, ,,	9/12/24	1.046	0.30	0.20	4.0	2/3/25	1.026
*45	,, ,,	,, ,,	9/12/24	1.046	0.30	0.20	4.0	2.3.25	1.026
*46	,, ,,	,, ,,	9/12/24	1.046	0.30	0.20	4.0	2.3.25	1.025

*35 Control (fermented naturally).
*36 Fermented with Yeast No. 6.
*37 ,, ,, ,, No. 37.
*38 Control (fermented naturally).

*39 Fermented with Yeast No. 9.
*40 ,, ,, ,, No. 6.
*41 ,, ,, ,, No. 9.
*42 ,, ,, ,, No. 37.

*43 Control (fermented naturally).
*44 Fermented with Yeast No. 6.
*45 ,, ,, ,, No. 9.
*46 ,, ,, ,, No. 37.

XVI.—ANNUAL REPORT OF THE CONSULTING CHEMIST FOR 1925.

(*Dr. J. A. Voelcker, M.A., F.I.C.*).

During the year, 27 samples were sent by members of the Society for analysis, and, in addition, there were 40 samples of Cider analysed in connection with the County Show at Maidstone.

The list of samples is as follows :—

Linseed Cake	8
Cotton Cake	1
Groundnut Cake	1
Compound Cakes and Meals	7
Bread	1
Superphosphate	2
Kainit	2
Sulphate of Ammonia	1
Lime	1
Soil	1
Water	1
	27

A. FEEDING STUFFS.

1. LINSEED CAKE.

Of the eight samples, five were good and pure, while three were unsatisfactory. In these latter cases, the presence of weed seeds was the principal objection, the cakes not having been made from well-cleaned seed.

The following analyses may be of interest :—

	A.	B.	C.
Moisture	12.87	11.08	12.19
Oil	8.67	14.15	15.02
Albuminoids	28.25	26.50	25.18
Carbohydrates, etc. ..	37.78	34.91	35.14
Woody Fibre	6.95	7.84	7.51
*Mineral Matter ..	5.48	5.52	4.96
	100.00	100.00	100.00
Nitrogen	4.52	4.24	4.03
*Including Sand ..	.19	.96	.59

a. This cake cost, in March, 1925, £13 17s. 6d. per ton, delivered, which was a high price at the time. Besides being of low quality, it contained excessive weed seeds and starchy impurities, and was a very dear cake.

b. This was a very pure cake and exceptionally rich in oil. Its price, in July, 1925, was £15 7s. 0d. per ton. Such a cake would probably be worth giving the price for if required for "fattening off" stock.

c. This cake was a second delivery of the same cake as *b*, and cost the same price.

2. COTTON CAKE.

The one sample sent of this was pure and good.

3. GROUNDNUT (EARTHNUT) CAKE.

A sample of the decorticated variety, and costing £12 5s. 0d. per ton was sent, and proved to be quite satisfactory. It gave 11.90 per cent. of Oil and 45.94 per cent of Albuminoids.

4. COMPOUND CAKES AND MEALS.

Of the seven samples sent, three were of Dairy meals. The principal ingredients of these were Cottonseed, Earthnut, Locust Bean and Rice, with, occasionally Oats and Malt Culms.

In the Compound cakes, Palmnut. as a rule, figured largely in addition to Cottonseed, Earthnut and Rice.

It sometimes happens that vendors of Compound cakes specify that they have made use of certain ingredients. This happened in three of the seven cases here mentioned. In two of them, the statement given was found to be very fairly correct, but, in the third, considerable divergence was found, inasmuch as, while it was stated that no barley was used, a considerable amount was found, on examination, to be present.

5. "STANDARD" BREAD.

A member sent me a sample of Bread which was said to be made from so-called "standard" flour. In this he had noticed the presence of a number of bits of some black material. On examining these microscopically, I found them to be the seeds of *polygonum*, a common weed seed of arable land, and, no doubt, the standard flour had been made from wheat not properly cleaned.

B. FERTILISERS.

1. SUPERPHOSPHATE.

Two samples of this were sent. The first contained 29.81 per cent., and the second, 33 per cent. of "soluble phosphate." In each case the guarantee was satisfied, but in the second instance the superphosphate was not in good condition, owing to the presence of a number of small, hard lumps, which would make distribution by machine difficult.

2. KAINIT.

Two samples of Kainit comprised all the potash manures sent. Each of these contained over 15 per cent. of potash and was of good value.

3. SULPHATE OF AMMONIA.

The one sample sent was the neutral variety of sulphate of ammonia, and was found to be dry and of very high quality, giving nitrogen equal to 25.65 per cent. of ammonia.

4. LIME.

The need of lime has of late been much emphasised, and it is a matter for some surprise that more samples of this have not been sent for examination.

The analyses of the two that I received were as follows :—

	A. Local Lime.	B. Callow Lime.
Oxide of Iron and Alumina	5.36	.89
Lime	58.33	66.27
Silica	17.77	1.78
Carbonic acid, water of hydration, etc. ..	18.54	36.06
	100.00	100.00

A. cost 32s. per ton, delivered. It was, however, a low quality lime, and not well burnt, containing a good deal of lime as carbonate. The amounts of Silica and Iron are also high.

B., which cost 33s. per ton on rail, was a better lime, but it had to a large extent become hydrated, and was not freshly burnt caustic lime. Neither of these samples was at all worth the price charged.

C. SOILS, WATERS, ETC.

1. SOIL.

One sample of soil was sent for full analysis, the question having arisen whether it required the application of phosphates or potash in particular. My analysis showed it to contain a plentiful amount of phosphoric acid, whereas, potash was somewhat deficient, and the further use of potash salts was advised.

It was noticeable in this soil that, although it contained a considerable amount of lime (5.70 per cent.), the amount of organic (vegetable) matter was exceptionally high (13.85 per cent.). The grass was very wiry in nature, and there was a thick " matting " of roots on the surface of the soil. Where such is the case, I cannot but think that the application of lime, although an analysis would indicate a sufficiency to be present, would be desirable, as I know nothing so well suited for destroying this "matting" as an application of burnt lime, followed by the grazing of stock.

2. WATER.

The one sample of water was a good and suitable one for drinking purposes.

Bath and West and Southern Counties Society.

MAIDSTONE MEETING, 1925.

JUDGES.

HORSES.

Shire.—T. Ewart, Dunsmore Home Farm, near Rugby.

Percherons.—G. Fenwick, North Luffenham Hall, Stamford.

Suffolk.—D. F. Smith, Easton, Wickham Market.

Hunters.—Major W. P. Cantrell-Hubbersty, Ragdale Hall, Leicestershire.

Arabs.—G. N. Ruxton, Craven Lodge, Monksherborne, Basingstoke.

Any Agricultural Breed.—C. F. Wood, Checkes Court, near Sittingbourne.

Remount Selling Classes.—Lt.-Col. F. D. Alexander and Lt.-Col. H. M. Ferrar.

Saddle.—Major W. P. Cantrell-Hubbersty, Ragdale Hall, Leicestershire.

Harness.—F. Vivian Gooch, Junior Constitutional Club, Piccadilly, London.

Jumping.—Sir H. H. A. Hoare, Bart., Stourhead, Zeals, S.O., Wilts.

CATTLE.

Devon.—L. H. Alford, Horridge, Ashford, Barnstaple, N. Devon.

South Devon.—H. W. Peeke, Paensford, Harbertonford, Totnes.

Shorthorn.—J. Peter, Old Vicarage, Berkeley, Glos.

Dairy Shorthorn.—J. L. Shirley, Silverton, Bletchley, Bucks.

Hereford.—H. R. Evans, Court of Noke, Pembridge, Herefordshire.

Sussex.—S. A. Hinkley, Stag Park, Petworth, Sussex.

British Friesian.—W. Brown, Old Park Farm, Bosham.

Aberdeen-Angus.—G. G. Macdonald, Apethorpe, Peterborough.

Red Poll.—J. E. Quested, The Firs, Cheriton, Kent.

Welsh Black.—D. Jenkins, Nenadd-yr-ynys, Taliesin, Card.

Ayrshire.—A. Steel, 162, Victoria Avenue, Southend-on-Sea.

Jersey Cows and Heifers.—W. Adams, The Thorns, Bebington, Cheshire.

Jersey Bulls.—Hon. Alexander Parker, Norton Curlieu, Warwick.

Guernsey.—C. Richardson, Lynchmere Farm, Haslemere, Surrey.

Kerry and Dexter.—E. P. F. Sutton, Sidmouth Grange, Earley, Berks.

Milk Recorded.—Capt. W. Briggs, Heaversham, Kemsing, Kent.

Milk and Butter Tests.—A. F. Somerville, Dinder House, Wells, Somerset.

SHEEP.

Devon Longwoolled.—E. Lawrence, Veryards, Cullompton, Devon.

Kent or Romney Marsh.—H. T. Greensted, Chequer Court, Ash, via Canterbury.

Southdown.—E. W. Amos, Wey Street, Hernhill, Faversham.

Hampshire Down.—E. T. Judd, Four Winds, Compton, Winchester.

Oxford Down.—W. D. Little, The Hermitage, Eddington, Hungerford, Berks.

Dorset Horn.—G. Mayo, Coker's Frome, Dorchester, Dorset.

Suffolk.—F. M. L. Slater, Weston Colville, Cambs.

Ryeland.—F. T. Gough, Lugwardine, Herefordshire.

Kerry Hill.—A. M. Pugh, The Grove, Knighton, Radnorshire.

GOATS.

S. Woodiwiss, Graveleys, Great Waltham, near Chelmsford.

PIGS.

Berkshire.—J. Fricker, Marsh Farm, Stalbridge, Dorset.

Large Black.—W. Kittow, jun., Bancroft, Cottered, Buntingford, Herts.

Large White.—H. W. Bishop, Pendley Stock Farms, Tring.

Middle White.—W. W. Buckle, Wharfedale Cottage, Middlethorpe, York.

Tamworth.—H. W. Bishop, Pendley Stock Farms, Tring.

Gloucestershire Old Spots.—W. Nixon, Offchurch, Leamington Spa, Warwickshire.

Wessex Saddleback.—L. L. BATTEN, Glenjoyce, East Wellow, Romsey.

Long White Lop-Eared.—H. J. KINGWELL, Bow Grange, Totnes, Devon.

Bacon Pigs.—L. A. TROW, c/o Messrs. C. & T. Harris (Ld.), Calne, Wilts.

PRODUCE.

Cider.—G. H. HOLLINGWORTH, Shire Hall, Gloucester.

Hops.—Messrs. WILD, NEAME & Co., 33, Borough High Street, London, and J. H. MATTHEWS & Co., 52, Borough High Street, London.

Cheese.—J. R. ALLEN, Highfield, Shepton Mallet.

Cream Cheese, Butter and Cream.—Miss M. C. TAYLOR, Somerset Farm Institute, Cannington Court, Bridgwater.

COMPETITIONS.

Butter-making.—MRS. S. E. STEVENS, Grove Farm, Emmer Green, Reading.

Milking.—J. MACINTOSH, National Institute for Research in Dairying, Shinfield, Reading.

Shoeing.—J. C. COLEMAN, M.R.C.V.S., The Limes, Croft Road, Swindon.

POULTRY.

A. G. PITTS, Berrow, Burnham-on-Sea—(Classes 1 to 22, 49 to 54 and 61 to 64), and G. DOBLE, Royal Ashton Hotel, Taunton—(Classes 1, 23 to 48 and 55 to 70).

FORESTRY.

Prof. H. A. PRITCHARD, Forestry Commission, 1, Whitehall, London, S.W.1.

PRIZE AWARDS, 1924.

⁂An animal designated in this list as the "reserve number" is entitled, *conditionally*, to succeed to any Prize that may become vacant in its class by reason of the animal placed above it by the Judges afterwards failing to qualify.

† Animals, where not otherwise stated, may be considered to have been bred by the Exhibitor.

ABBREVIATIONS EXPLAINED :—S., sire ; d., dam ; s.d., sire of dam ; y., year ; m., month ; w., week ; d., day ; R., Reserve ; V.H.C., Very Highly Commended ; H.C., Highly Commended ; C., Commended.

The Prizes in Classes 47, 48, 49 and 235 to 238 were offered by the Maidstone Local Committee and the Prizes in Classes 31, 46 and 141, the Champion Prizes in the Kent Sheep Classes and £33 towards the other Prizes in the Horses, Cattle, Sheep and Pig Classes, by the Kent County Agricultural Society.

HORSES.

SHIRE.

(Registered or eligible for registration in the Shire Horse Society's Stud Book).

CLASS 1.—*Shire Mare, in-foal, or with foal at foot.* [4 entries].

I. (£15.)—W. ROGERS, The Court Lodge, Horton Kirby, Kent, bay, **Marden Evelyn II** (85659), foaled 1915, bred by Sir W. Greenwell, Bart., Marden Park, Woldingham ; s Champion's Goalkeeper (30296), d Marden Constance (67777), s d Norbury Menestrel (23543) ; with foal by Sundridge Nulli Secundus (36952).

II. (£10.)—W. ROGERS, bay, **Princess Childwick of Sundridge** (105084), foaled 1919, bred by R. L. Mond, Combe Bank, Sundridge ; s Childwick Champion (22215), d Farewell Tolworth (81346), s d King of Tanbridge (24351) ; with foal by Sundridge Nulli Secundus (36952).

III. (£3.)—A. CHESTER BEATTY, Calehill Park, Little Chart, Kent, bay, **Calehill Pleasure** (111241), foaled 1921 ; s Motto's Maxim (34172), d Codmore Precious (92303), s d Orfold Double King (32691) ; in foal.

CLASS 2.—*Shire Colt or Filly Foal, produce of Mare in Class* 1. [3 entries.]

I. (£5.)—W. ROGERS, The Court Lodge, Horton Kirby, Kent, s Sundridge Nulli Secundus (36952), d Marden Evelyn II (85659).

II. (£3.)—Ditto, s Sundridge Nulli Secundus (36952), d Princess Childwick of Sundridge (105084).

CLASS 3.—*Shire Filly or Gelding, foaled in* 1924. [5 entries].

I. (£10.)—Sir B. GREENWELL, Bart., Marden Park, Woldingham, Surrey, bay filly, **Marden Rebecca**; s Champion's Goalkeeper (30296), d Marden Phyllis (64305), s d Hotspur 4th (24334).

CLASS 4.—*Shire Filly or Gelding, foaled in* 1923. [3 entries.]

I. (£10.)—Sir B. GREENWELL, Bart., Marden Park, Woldingham, Surrey, bay filly, **Marden Melody 2nd**; s Theale Lochinge (35246), d Marden Melody (89460), s d Champion's Goalkeeper (30296).

II. (£5.)—W. ROGERS, The Court Lodge, Horton Kirby, Kent, bay filly, **Maplescombe Fashion** (116907); s Pendley Footprint (37728), d Champion's Fashion of Sundridge (92147), s d Childwick Champion (22215).

CLASS 5.—*Shire Filly or Gelding, foaled in* 1922. [2 entries.]

I. (£10.)—W. ROGERS, The Court Lodge, Horton Kirby, Kent, brown filly, **Cropper Floss** (113995), bred by J. Q. Rowett, Frant; s Babingley Nulli Secundus (26993), d Brickenden Floss (87649), s d Severn Champion (27759).

II. (£5.)—A. CHESTER BEATTY, Calehill Park, Little Chart, Kent, bay filly, **Calehill Tatyana** (113828); s Measham Charming King (34149), d Codmore Treasure (87968), s d Orfold Double King (32691).

CLASS 6.—*Shire Stallion, foaled in* 1923 [1 entry.]

[NO EXHIBIT].

CLASS 7.—*Shire Colt, foaled in* 1924. [1 entry].

[NO EXHIBIT.]

MEDAL.

GIVEN BY THE SHIRE HORSE SOCIETY AND OPEN ONLY TO MEMBERS OF THE BATH AND WEST SOCIETY ELECTED NOT LESS THAN SIX MONTHS PREVIOUS TO MARCH 31, 1925.

A Gold Medal, or the sum of £5, for the best Mare or Filly in the Shire Horse Classes, under Condition 47, and to the Breeder of the winner under the condition stated, a Prize of £5.

I.—Sir B. GREENWELL, Bart., Marden Park, Woldingham, Surrey, bay filly, **Marden Melody 2nd**; s Theale Lochinge (35246), d Marden Melody (89460), s d Champion's Goalkeeper (30296).

R.—Sir B. GREENWELL, Bart., bay filly, **Marden Rebecca**; s Champion's Goalkeeper (30296), d Marden Phyllis (64305), s d Hotspur 4th (24334).

PERCHERONS.

(£20 towards the Prizes in Classes 8 to 11 were given by the British Percheron Horse Society).

CLASS 8.—*Mare, in foal or with foal at foot.* [3 entries.]

I. (£10.)—CHIVERS & SONS, LTD., Histon, Cambridge, dark grey, **Ustache** (B.509), foaled 1920, bred by Mons. L. Brenier, Bout-du-bois, Mortagne, France ; s Qualvados (F.131498), d Officialle (F.119963), s d Jolicoeur (F.85324) with foal by Lagor (B.1).

II. (£5.)—C. P. ACKERS, Huntley Manor, Gloucester, dark grey, **Ranavalo**, foaled 1917, bred by M. Charon, La Couche, France ; s Jallieu (F.86306), d Herminie (F.74523), s d Guibet (F.57895) ; with foal by Quorail (41).

CLASS 9.—*Percheron Colt or Filly Foal, produce of Mare in Class* 8. [3 entries.]

I. (£5.)—CHIVERS & SONS, LTD., Histon, Cambridge, s Lagor (B.1) d Ustache (B.509).

II. (£3.)—C. P. ACKERS, Huntley Manor, Gloucester, s Quorail (41) d Ranavalo.

CLASS 10.—*Percheron Filly, foaled in* 1923. [2 entries.]

I. (£10.)—THE DINAM ESTATES CO. (Mr. D. Davies, M.P.), Llandinam Hall Farm, Llandinam, Co. Montgomery, dark grey, **Dinam Fouriciere** (B.580) ; s Prescient (126226), d Soudiere (172723), s d Nigaud (111585).

II. (£5.)—THE DINAM ESTATES CO., grey **Dinam Quotite** (B.581) ; s Prescient (126226), d Quoze (131059), s d Laperean (100259).

CLASS 11.—*Percheron Filly, foaled in* 1922. [5 entries.]

I. (£10.)—CHIVERS & SONS, LTD., Histon, Cambridge, dark grey, **Argent use** (B.591), bred by Mons. C. Gasselin, Martiniere, Mortagne, France ; s Remords (F.133354), d Litorne (F.100791), s d Herold (F.74198).

II. (£5.)—CHIVERS & SONS, LTD., grey, **Greyling Welcome** (B.443), bred by Mrs. R. Emmet, Moreton Paddox, Moreton Morrell, Warwick ; s Rhum (B.53), d Reversion (B.439), s d Noyal (F.117498).

III. (£3.)—C. P. ACKERS, Huntley Manor, Gloucester, light grey, **Huntley Peri** ; s Quorail (41), d Perrugue (440), s d Largiuer (F.100640).

R.—C. P. ACKERS, dark grey, **Huntley Minerva** ; s Quorail (41), d Persique (183), s d Longtemps (F.102618).

SUFFOLK.

(£20 towards the Prizes in Classes 12 to 14 were given by the Suffolk Horse Society).

CLASS 12.—*Suffolk Mare, in-foal, or with foal at foot.* [2 entries.]

I. (£10.)—Sir C. QUILTER, Bart., Bawdsey Estate Office, near Woodbridge, Suffolk, chestnut, **Bawdsey Porcelain** (10404), foaled 1919 ; s Earl Gray (4219), d Bawdsey China Doll II (7252), s d Bentley War Cry (3028), with foal by Framlingham Allenby.

II. (**£5.**)—A. Preston Jones, Mickleover House, near Derby, chestnut, **Sudbourne Moonlight** (8623), foaled 1915, bred by K. M. Clark, Sudbourne Hall, Orford ; s Sudbourne Peter (3955), d Sudbourne Twilight (7219), s d Sudbourne Arabi (3287) ; with foal by Horsted Punchinello (5096).

Class 13.—*Suffolk Colt or Filly Foal, produce of Mare in Class* 12. [2 entries.]

I. (**£5.**)—A. Preston Jones, Mickleover House, near Derby, s Horsted Punchinello (5096), d Sudbourne Moonlight (8623),

II. (**£3.**)—Sir C. Quilter, Bart., Bawdsey Estate Office, near Woodbridge, Suffolk, s Framlingham Allenby d Bawdsey Porcelain (10404).

Class 14. *Suffolk Colt, Filly or Gelding, foaled in* 1922 *or* 1923. [3 entries.]

I. (**£10.**)—Sir C. Quilter, Bart., Bawdsey Estate Office, near Woodbridge, Suffolk, chestnut filly, **Bawdsey Roseate** (12604), foaled 1923 ; s Sudbourne Arab (3309), d Bawdsey Autumn Glory (8766), s d Bawdsey Harvester (3076).

II. (**£5.**) -Sir C. Quilter, Bart., chestnut gelding, **Peter**, foaled 1922; s Framlingham Allenby (4826), d Bawdsey Minerva (6449), s d Bawdsey Harvester (3076).

III. (**£3.**)--Hollesley Bay Labour Colony, Hollesley Bay, Suffolk, chestnut stallion, white blaze on face, **Colony Gleanor** (5578), foaled 1923, s Morston Connaught (4590), d Colony Maid (7927), s d Bawdsey Reaper (3635).

HUNTERS.

Class 15.—*Hunter Mare, in-foal, or with foal at foot.* [8 entries.]

I. (**£15.**)--Mrs. E. Rich, The Grays Stud Farm, Westerham Hill, Kent, bay or brown, **Diamond Wedding**, foaled 1917 ; s Hanover Square, d Queen of Diamonds ; with foal by Attalus.

II. (**£10.**)--W. J. Fryer, C.B.E., Holme Park, Sonning, Berks., bay, **Larch**, foaled 1911, bred by Lt.-Col. Meysey Thompson, Knaresborough, Yorks ; s Birk Gill, d Britannia, s d Prince Vortimer ; with foal by Tantamount.

III. (**£3.**) -C. C. Naumann, Crossways, Baynards, Horsham, brown, **Melody**, foaled 1915, bred by the late F. G. Naumann, Redhurst, Cranleigh, Surrey: s Popgun ; with foal by Fort.

R.—E. G. MacAndrew, Pallinghurst, Baynards, Horsham, bay, **Tiffield Girl**, foaled 1916 ; s Chevalier ; with foal by Fort.

MEDAL.

GIVEN BY THE HUNTERS' IMPROVEMENT AND NATIONAL LIGHT HORSE BREEDING SOCIETY, UNDER CONDITION 48.

A Gold Medal, or £5 and a Bronze Medal, for the Best Hunter Brood Mare in Class 15, *registered with a number in the Hunter Stud Book, at the time of entry or within a month of the award, not having previously won the above-named Society's Gold Medal as a Brood Mare in* 1925, *and which must have her foal at foot, or produce a living foal in* 1925 *to a thoroughbred horse or Registered Hunter Sire.*

(Only Prize winners were eligible for the Medal).

I.—Mrs. E. RICH, The Grays Stud Farm, Westerham Hill, Kent, bay or brown, **Diamond Wedding**, foaled 1917; s Hanover Square, d Queen of Diamonds; with foal by Attalus.

R.—W. J. FRYER, C.B.E., Holme Park, Sonning, Berks., bay, **Larch**, foaled 1911, bred by Lt.-Col. Meysey Thompson, Knaresborough, Yorks; s Birk Gill, d Britannia, s d Prince Vortimer; with foal by Tantamount.

CLASS 16.—*Hunter Colt or Filly Colt, produce of Mare in Class* 15. [5 entries.]

I. (£5.)—E. G. MACANDREW, Pallinghurst, Baynards, Horsham, s Fort, d Tiffield Girl.

II. (£3.)—C. C. NAUMANN, Crossways, Baynards, Horsham, s Fort, d Melody.

CLASS 17.—*Hunter Filly, Colt or Gelding, foaled in* 1924. [8 entries.]

I. (£10.)—Mrs. E. RICH, The Grays Stud Farm, Westerham Hill, Kent, chestnut colt, bred by The Middleton Park Stud, Ireland; s Lomond, d Marla, s d Marco.

II. (£5.)—Captain J. T. KYFFIN, Froxfield Manor, near Hungerford, Wilts, black filly, **Sommette**; s General Gough, d Belinda.

III. (£3.)—H. R. PELLY, Lyndsays Farm, Ingatestone, Essex, bay filly, black points, **Easter Egg II**; s St. Girons, d Sarah II, s d St. Lorenzo.

R.—E. G. MACANDREW, Pallinghurst, Baynards, Horsham, bay filly, **Lipstick**; s The Best, d Moyna (H.I.S.B. 6102).

CLASS 18.—*Hunter Filly, Colt or Gelding, foaled in* 1923. [4 entries.]

I. (£10.)—H. L. STOREY, The Manor House, Malmesbury, chestnut gelding, s Bachelor's Lodge, d Bessie, s d Astrologer.

II. (£5.)—E. G. MACANDREW, Pallinghurst, Baynards, Horsham, black filly. **Twinkle**; s The Best, d Moyna (H.I.S.B. 6102).

III. (£3.) -Mrs. M. A. Bromwich, Kenfield Hall, Canterbury, brown gelding, **Kenfield Surprise** ; s Guergour, d Mystery, s d Meleager.

Class 19.—*Hunter Filly or Gelding, foaled in* 1922. (3 entries).

I. (£10.)- H. R. Pelly, Lyndsays Farm, Ingatestone, Essex, brown filly, **Joan V**, ; s Chanteur, d Sarah II, s d St. Lorenzo.

II. (£5.) J. H. Naumann, Crossways, Baynards, Horsham, chestnut gelding, **Reindeer** ; s General Villa.

III. (£3.)--Mrs. M. A. Bromwich, Kenfield Hall, Canterbury, grey gelding, **Bright Boy of Kenfield** ; s Guergrour, d Marigold, s d Golden Grebe.

Class 20.—*Hunter Mare or Gelding, foaled before* 1922, *that had not won a prize of* £10 *or over under Saddle at any Show held previous to April* 1, 1925. [9 entries.].

I. (£10.)---Lt.-Col. G. C. Birdwood, Redhill, Surrey, chestnut gelding, **O'Reilly**, foaled 1921, bred by J. S. Rickason, Scorwood, near York ; s Markham, d by Red Eagle.

II. (£5.)--J. H. Naumann, Crossways, Baynards, Horsham, bay mare, **Rosette**, foaled 1918 ; s John Lampton, s d Green Hackle.

III. (£3.)—Lt.-Col. G. C. Birdwood, brown gelding, **Honor Bright**, foaled 1921, bred by H. L. Storey, Malmesbury, Wilts ; s Moonlighter, d Fatima, s d (H.S.B. 5342).

R.---W. N. Unwin, Arle Court, Cheltenham, bay gelding, **Gay Laddie**, foaled 1918, bred by Col. Croft, Noah's Ark, Ware ; s New Park, d Saucy Girl.

Class 21.—*Hunter Mare or Gelding, foaled in* 1921. [6 entries.]

I. (£10.)- Lt.-Col. G. C. Birdwood, Redhill, Surrey, chestnut gelding, **O'Reilly**, foaled 1921, bred by J. S. Rickason, Scorwood, near York ; s Markham, d by Red Eagle.

II. (£5.)- -Mrs Holmes, Slinfold, Sussex, dark brown mare, **Daphne IV**. foaled 1921 ; s Cock-o-Hoop, d The Gift VI.

III. (£3.)—Mrs. Edgar Horne, Hall Place, Shackleford, Godalming, Surrey, chestnut gelding, **Pheonix**, foaled 1921 ; s Cock-o-Hoop.

R.—Lt.-Col. G. C. Birdwood, brown gelding, **Honor Bright**, foaled 1921, bred by H. L. Storey, Malmesbury, Wilts ; s Moonlighter, d Fatima, s d (H.S.B. 5342).

Class 22.—*Hunter Mare or Gelding, foaled before* 1922, *to carry not more than* 12 *stone* 7*lbs*. [6 entries.]

I. (£20.)—Mrs. P. Fleming, Grendon Hall, Aylesbury, chestnut mare, **Ruth II** (H.I.S.B. 5807), foaled 1918, bred by Major G. Hardy, Foston Hall, Derby ; s Rathurde, d Beware.

II. (£10.)—Constance, Duchess of Westminster, Hazelgrove House, Sparkford, Somerset, dark chestnut gelding, **Phillipino**, foaled 1920, bred in Co. Waterford ; s Le Souvenir, d by Walmsgate.

III. (**£3.**)—Mrs. HOLMES, Slinfold, Sussex, dark brown mare, **Daphne IV**, foaled 1921 ; s Cock-o-Hoop, d The Gift VI.

R.—Lt.-Col. G. C. BIRDWOOD, Redhill, Surrey, brown gelding, **Honor Bright**, foaled 1921, bred by H. L. Storey, Malmesbury, Wilts ; s Moonlighter, d Fatima, s d (H.S.B. 5342).

CLASS 23.—*Hunter Mare or Gelding, foaled before* 1922, *to carry over* 12 *stone* 7*lbs. and under* 14 *stone.* [8 entries.]

I. (**£20.**)—CONSTANCE, DUCHESS OF WESTMINSTER, Hazelgrove House, Sparkford, Somerset, chestnut gelding, **Sunshine**, foaled 1920, bred by Lord Rathdonnell ; s Sungirt, d Cosy 2nd, s d Eques.

II. (**£10.**)—Major J. B. H. WOODCOCK, D.S.O., Heathmanstreet Manor, Nether Wallop, Hants, chestnut gelding, **Rajah**, foaled 1917 ; s Kirkheaton.

III. (**£3.**)—J. H. NAUMANN, Crossways, Baynards, Horsham, bay mare, **Rosette**, foaled 1918 ; s John Lampton, s d Green Hackle.

CLASS 24.—*Hunter Mare or Gelding, foaled before* 1922, *to carry* 14 *stone or over.* [5 entries].

I. (**£20.**)—O. DIXON, Crescent Road, Reading, chestnut gelding, **Red Fox** (H.I.S.B. Vol. xi, No. 808), foaled 1919, bred by M. Fitzgerald, Ardmore, Co. Waterford, Ireland ; s Kilmucklin, s d Beware.

II (**£10.**)—Major J. L. NICKISSON, M.F.H., Hinton Manor, Swindon, grey gelding, **Buckingham**, foaled 1914.

III. (**£3.**)—Lt.-Col. G. C. BIRDWOOD, Redhill, Surrey, chestnut gelding, **O'Reilly**, foaled 1921, bred by J. S. Rickason, Scorwood, near York ; s Markham, d by Red Eagle.

R.—Miss M. MITCHELSON, Holme Park, Rotherfield, Sussex, bay mare, **Bright Idea**.

MEDAL.

GIVEN BY THE HUNTERS' IMPROVEMENT AND NATIONAL LIGHT HORSE BREEDING SOCIETY, UNDER CONDITIONS 49.

A Silver Medal or £1 (*at the option of the winner*), *for the best Hunter Mare or Gelding of any age, exhibited in Classes* 20 *to* 24 *by a member of the Hunters' Improvement and National Light Horse Breeding Society, whose application for membership must have been lodged within a month of the award.*

Only Prize-Winners in the Classes were eligible for this Medal.

I.—CONSTANCE, DUCHESS OF WESTMINSTER, Hazelgrove House, Sparkford, Somerset, chestnut gelding, **Sunshine**, foaled 1920, bred by Lord Rathdonnell ; s Sungirt, d Cosy 2nd, s d Eques.

R.—Mrs. P. FLEMING, Grendon Hall, Aylesbury, chestnut mare, **Ruth II** (H.I.S.B. 5807), foaled 1918, bred by Major G. Hardy, Foston Hall, Derby ; s Rathurde, d Beware.

ARABS AND PONIES.

CLASS 25.—*Arab Mare in-foal, or with foal at foot.* [2 entries.].

I. (£10.)—Brig.-Gen. F. F. LANCE, Wentfield, Wrotham, bay, **Libuani**, foaled 1919 ; d Mejamich ; in foal.

II. (£5.)—C. W. HOUGH, Hydes, Abridge, Essex, chestnut, **Amida** (Vol. 2, p. 100, Arab Horse Stud Book), s Hu Lashmak, d Ajramiche, s d Mesaond ; with foal by Shahzada.

CLASS 26.—*Arab Stallion, any age.* [3 entries.]

I. (£10.)—Brig.-Gen. F. F. LANCE, Wentfield, Wrotham, Kent, bay, **Ajlun,** foaled 1923 ; s Ch. Rasim, d Libuani.

II. (£5.)—C. W. HOUGH, Hydes, Abridge, Essex, **Nuri Sherif** (Vol. 2, p. 63), 5 years, ; s Muriddin, d Sheba, s d Ben Ayrek ; bred by the late S. G. Hough.

III. (£3.)—E.D.O. CLARKE, Iborden Park, Biddenden, Kent, flea-bitten grey, **Koheilan,** foaled 1912, bred by the late Emir Ibn Raschid of Hail, Nejd.

CLASS 27.—*Arab Colt or Filly, foaled in* 1922, 1923 *or* 1924. [6 entries.]

I. (£10.)—Brig.-Gen. F. F. LANCE, Wentfield, Wrotham, Kent, bay, **Ajlun,** foaled 1923 ; s Ch. Rasim, d Libuani.

II. (£5.)—C. W. HOUGH, Hydes, Abridge, Essex, chestnut filly, **Nezza,** foaled 1924 ; s Shahzada, d Nejma (imported.)

III. (£3.)—Mrs. C. W. HOUGH, Hydes, Abridge, Essex, chestnut filly, **Abideh,** foaled 1923, bred by the late J. G. Hough, Springhouse Park, Theydon Bois, Essex ; s Nuri Pasha, d Amida, s d Ibn Fashmak.

R.—Brig.-Gen. F. F. LANCE, bay mare, **Awalani,** foaled 1923 ; s Ch. Rasim, d Libuani (imported).

SILVER MEDALS.

GIVEN BY THE ARAB HORSE SOCIETY.

Best Mare or Filly in Class 25 *or* 27.

I.—Brig.-Gen. F. F. LANCE, Wentfield, Wrotham, bay **Libuani,** foaled 1919 ; d Mejamich ; in foal.

R.—C. W. HOUGH, Hydes, Abridge, Essex, chestnut filly, **Nezza,** foaled 1924; s Shahzada, d Nejma (imported).

Best Stallion or Colt in Class 26 *or* 27.

I.—Brig.-Gen. F. F. LANCE, Wentfield, Wrotham, Kent, bay, **Ajlun** foaled 1923 ; s Ch. Rasim, d Libuani.

R.—C. W. HOUGH, Hydes, Abridge, Essex, **Nuri Sherif** (Vol. 2, p. 63), 5 years, s Muriddin, d Sheba, s d Ben Ayrek ; bred by the late S. G. Hough.

POLO AND RIDING PONIES.

Class 28.—*Mare, not exceeding* 15 *hands, in-foal, or with foal at foot.* [2 entries.]

I. (£10) and Silver Medal.*— Miss Calmady-Hamlyn, Pearroc Vean, Buckfast, S. Devon, grey, **Griselda 2nd,** aged ; with foal by Marzio.

II. (£5.)—E. D. O. Clarke, Iborden Park, Biddenden, Kent, bay, white blaze, **Colleen VI** (Approved Mare Register, Page 147), foaled 1919, bred by Mr. Weeks, Hurst, Berkshire ; d Kitty, s d Lord Toddington ; with foal by Golden Vanity.

*Given by the National Pony Society.

Class 29.—*Pony, Filly or Gelding, foaled in* 1921, 1922 *or* 1923. [2 entries.]

I. (£10.)—Mrs. M. A. Bromwich, Kenfield Hall, Canterbury, bay filly, **Mesaond's Delight,** foaled 1922 ; s Guergour, d Aerowings (3666), s d White Wings (464).

II. (£5.)—E. D. O. Clarke, Iborden Park, Biddenden, Kent, brown gelding, **Padraic,** foaled 1923 ; s Golden Vanity, d Collen VI.

Class 30.—*Pony Stallion, not exceeding* 15 *hands, any age.* [1 entry.]

I. (£10.)—E. D. O. Clarke, Iborden Park, Biddenden, Kent, flea-bitten grey **Koheilan,** foaled 1912 ; bred by the late Emir Ibn Raschid of Hail, Nejd.

ANY AGRICULTURAL BREED.

(The Prizes in Class 31 were given by the Kent County Agricultural Society.)

Class 31.—*Mare or Gelding, foaled in or before* 1922, *suitable for Agricultural work and the property of a resident in the County of Kent, shown in hand without gear.* [12 entries.].

I. (£8.)—W. Rogers, Horton Kirby, bay shire mare, **Marden Evelyn II.**

II. (£4.)—W. Rogers, bay shire mare, **Princess Childwick of Sundridge.**

III. (£3.)—A. English, Wateringbury, bay gelding, **Sundridge Combination.**

R.—W. Rogers, brown shire filly, **Cropper Floss.**

H.C.—W Veitch, Sittingbourne.—Ditto, ditto.

C.—Mrs. E. Rich, Westerham Hill, Kent, chestnut Suffolk gelding, **Prince.** —Ditto, chestnut, **Captain.**

REMOUNT SELLING CLASSES.

Horses shown in these two Classes to have been bred in Great Britain or Ireland, and certified as sound and free from vice.

Class 32.—*Mare or Gelding, not under* 4 *years nor over* 6 *years old, not less than* 15 *nor over* 15.2½ *hands, undocked, suitable for a cavalry troop horse.* [5 entries.]

(The Director of Remounts had the option of purchasing any animal in this Class, if ridden, for a sum not exceeding £55, or, if shown in hand, for a sum not exceeding £50).

I. (£10.)—Mrs. K. E. Dunlop, Springrove Park, Edenbridge, black mare, **Ketipec.**

II. (£5.)—E. R. CROSSLEY, Ruckinge, Ashford, bay.

R.—H. BUCKLAND, Great Chart, Ashford, brown gelding.

CLASS 33.—*Mare or Gelding, light draught, not under* 4 *years nor over* 7 *years old, not less than* 15.1½ *nor over* 15.3 *hands, weight not to be less than* 1,200*lbs., suitable for Royal Horse or Royal Field Artillery.* [2 entries.]

The Director of Remounts had the option of purchasing any animal in this Class for a sum not exceeding £55.

I. (£10.)—J. C. MAIR, Otterden, Faversham, dark bay gelding, **Paddy.**

SADDLE.

CLASS 34.—*Hack Mare or Gelding,* 15 *hands and over, ridden on the* 2*nd day of the Show.* [14 entries.]

I. (£10.)—THE LADY TERRINGTON, Marlow, Bucks, chestnut mare, **Edgarvio.**

II. (£5.)—Major R. M. STEWART RICHARDSON, Dauntsey, Chippenham, brown mare, **Moonbeam.**

III. (£2.)—THE LADY PENRHYN, Stony Stratford, Bucks, chestnut mare, **Bimbim.**

R.—Major J. B. H. WOODCOCK, D.S.O., Nether Wallop, Hants., chestnut gelding, **Rajah.**

CLASS 35.—*Saddle Pony, not over* 13 *hands, suitable for and ridden by a child not over* 12 *years of age last birthday, on the* 2*nd day of the Show.* [6 entries.]

(A Whip was presented to the best Boy and best Girl Riders in this Class).

I. (£5) and Whip.—Master R. G. H. G. EYRE, Eastwell, near Ashford. **Squirrel Nutkin.**

II. (£4.) and Whip.—Miss O. V. RICKS, Hatch Farm, Addlestone, Surrey, cream gelding, **Sunshine.**

III. (£2.)—Miss F. PALEY, Elham, Canterbury, bay mare, **Polly.**

C.—Mrs. F. SACKVILLE GOLDEN, Faversham, Kent, brown mare, **Vingie Darling.**

CLASS 36.—*Saddle Hack Mare or Gelding, any height, ridden by a lady on the* 3*rd day of the Show.* [7 entries.]

I. (£10.)—Major R. M. STEWART RICHARDSON, Dauntsey, Chippenham, brown mare, **Moonbeam.**

II. (£5.)—THE LADY PENRHYN, Stony Stratford, chestnut mare, **Bimbim.**

III. (£2.)—Major J. B. H. WOODCOCK, D.S.O., Nether Wallop, chestnut gelding, **Rajah.**

R.—Miss K. S. STYLES, M.F.H., Otford, Sevenoaks, bay mare, **Star of Eve.**

CLASS 37.—*Stallion, Mare or Gelding, entered or accepted for the Arab Stud Book or the Arab bred Register, ridden on the 4th day of the Show and judged by the Arab judge.* [4 entries.]

I. (£10.)—H. G. TYRRWHIT-DRAKE, Cobtree Manor, Maidstone, bay gelding, **Sheik.**

II. (£5)—E. D. O. CLARKE, Biddenden, Kent, dark brown stallion, **Feluja.**

III. (£2)—C. W. HOUGH, Abridge, Essex, chestnut mare, **Ameda.**

CLASS 38.—*Hack Mare or Gelding, under 15 hands, ridden on the 4th day of the Show.* [5 entries.]

I. (£10.)—Mrs. P. HUNLOKE, Malmesbury, Wilts, brown mare, **Orphan.**

II. (£5.)—Mrs. P. FLEMING, Aylesbury, grey, **Bobbin.**

III. (£2.)—Mrs. P. HUNLOKE, **Peggy.**

R.—Mrs. E. RICH, Westerham Hill, Kent, chestnut mare, **Loch Monar.**

CLASS 39.—*Polo Pony, not over 15 hands, 4 years old and over, ridden on the 5th day of the Show, and judged by a Polo Pony judge.* [2 entries.]

I. (£10) and Medal.*—Mrs. E. RICH, Westerham Hill, chestnut mare, **Loch Monar.**

*GIVEN BY THE NATIONAL PONY SOCIETY.

CLASS 40.—*Pony, not over 14 hands, suitable for and ridden by a child not over 14 years of age last birthday, on the 5th day of the Show.* [7 entries.]

(A Whip was offered to the best Boy and best Girl Riders in this Class).

I. (£5) and Whip.—Mrs. P. HUNLOKE, Malmesbury, Wilts, mare, **Peggy.**

II. (£4.)—G. V. BETHELL, 4, Cornwall Terrace, Regent's Park, London, bay with white blaze, gelding, **Royal Oak.**

III. (£2.)—Miss G. SOTHAM, Horley, Surrey, bay mare, **Daphne.**

IV. (£1.)—Capt. P. WORTHINGTON, M.C., Challock, near Ashford, bay gelding, **Robin.**

H.C.—Mrs. DILLON CLARKE, King Arthurs School, Biddenden, **Golden Vanity.**

HARNESS.

CLASS 41.—*(Novice Class.) Mare or Gelding, not over 14 hands, that had not previously won a prize of over £5 in value in Single Harness at any show held previous to January 1, 1925, driven on the 1st day of the show.* [7 entries.]

I. (£10.)—Mrs. B. TILBURY, Preston Road, Brighton, bay gelding, **Gunfire.**

II. (£5.)—W. W. TAYLOR, Loose, Kent, dark brown mare, **Habrough Salome.**

III. (£3.)—C. H. SIMMONS, Maidstone, brown mare, **Maidstone Pick-em-up.**

IV. (**£2.**)—C. H. Simmons, bay mare, **Braishfield Phlox** (24447).

R.—F. Spink, Leybourne, **Leybourne Lily.**

Class 42—(*Novice Class*). *Mare or Gelding, over* 14 *and not over* 15 *hands, that had not previously won a prize of over* £5 *in value in Single Harness at any Show held previous to January* 1, 1925, *driven on the* 1*st day of the Show.* [4 entries.]

I. (**£10.**)—S. J. Wellbeloved, 29, Caterham Road, Lewisham, S.E., bay gelding, **Happy Man.**

II. (**£5.**)—C. H. Simmons, Maidstone, dark chestnut mare, **Lady Maidstone** (25401).

III. (**£3.**)—W. W. Taylor, Loose, Kent, dark chestnut mare, **Carmel Queen.**

IV. (**£2.**)—R. Chambers, Rock Cottage, Leybourne, Kent, brown gelding, **Sir Eager.**

Class 43.—(*Novice Class*). *Mare or Gelding, over* 15 *hands, that had not previously won a prize of over* £5 *in value in Single Harness at any Show held previous to January* 1, 1925, *driven on the* 2*nd day of the Show.* [3 entries.]

I. (**£10.**)—R. Chambers, Rock Cottage, Leybourne, Kent, chestnut gelding, **Viscount Hilden.**

II. (**£5.**)—W. W. Taylor, Loose, Kent, chestnut gelding, **Carmel Victor.**

III. (**£3.**)—H. Haydon, The Banks, Carshalton, chestnut gelding, **Chamberlain.**

Champion Prize.

Best Mare or Gelding shown in Single Harness in Classes 41 *to* 43, *judged on the second day of the Show.*

I. (**£10.**)—Mrs. B. Tilbury, Preston Road, Brighton, bay gelding, **Gunfire.**

R.—R. Chambers, Rock Cottage, Leybourne, Kent, chestnut gelding, **Viscount Hilden.**

Class 44.—*Pair of Mares or Geldings, driven in double harness on the* 3*rd day of the Show.* [2 entries.]

I. (**£15.**)—H. J. Colebrook, Fulmer, Bucks, geldings, **Glenavon Crest** and **Netherfield Argenteau.**

Class 45.—*Tandems, Mares or Geldings, driven on the* 3*rd day of the Show,* [1 entry.]

I. (**£15.**)—H. J. Colebrook, Fulmer, Bucks, geldings, **Glenavon Crest and Netherfield Argenteau.**

(The Prizes in Class 46 were given by the Kent County Agricultural Society).

CLASS 46.—*Mare or Gelding, any height, the property of a resident in Kent, driven on the 3rd day of the Show.* [7 entries].

I. (£8.)—W. W. TAYLOR, Loose, Kent, bay mare, **Bricket Fortuna.**

II. (£4.)—C. H. SIMMONS, Maidstone, chestnut gelding, **Burleigh Meh-Met-Bey**

III. (£2.)—R. CHAMBERS, Kent, chestnut gelding, **Viscount Hilden.**

R.—W. W. TAYLOR, chestnut mare, **Carmel Duchess.**

LOCAL TRADESMEN.

(The Prizes in Classes 47, 48 and 49 were given by the Maidstone Local Committee.)

CLASS 47.—*Light Mare or Gelding, the property of a Tradesman either resident, or carrying on business within the County of Kent. exhibited in a light two-wheeled vehicle, both horse and vehicle bona fide used for purposes of his trade only, for not less than three months prior to May* 28, 1925, *on the 4th day of the Show.* [8 entries.]

I. (£5.)—W. NAYLOR, Sevenoaks, chestnut gelding, **Laddie.**

II. (£4.)—R. CHAMBERS, Leybourne, brown gelding, **Sir Eager.**

III. (£3.)—A. V. CHAMBERS, East Farleigh, chestnut mare, **Lady Barrister.**

IV. (£2.)—A. P. WHITLEY, Maidstone, chestnut mare, **Dolly.**

R.—C. FIELD. Sevenoaks, **Grasshopper.**

V.H.C.—H. PEARCE.

CLASS 48.—*Light Mare or Gelding, the property of a tradesman either resident or carrying on business within the County of Kent, exhibited in a light four-wheeled vehicle, both horse and vehicle bona fide used for purposes of his trade only, for not less than three months prior to May* 28, 1925, *on the 4th day of the Show.* [3 entries.].

I. (£5.)—R. CHAMBERS, Leybourne, brown gelding, **Sir Eager.**

II. (£4.)—M. E. BIGGS, 45, Scott Street, Maidstone.

III. (£3.)—MAIDSTONE CO-OPERATIVE SOCIETY (LTD)., 51, Stone Street, Maidstone, chestnut mare, **Peggy.**

CLASS 49.—*Heavy Mare or Gelding, the property of a Tradesman either resident or carrying on business within the County of Kent, exhibited in a heavy two or four-wheeled vehicle, both horse and vehicle bona fide used for purpose of his trade only, for not less than three months prior to May* 28, 1925, *on the 4th day of the Show.* [7 entries.].

I. (£5.)—STYLE & WINCH, LTD., Medway Brewery, Maidstone, bay gelding, **Chubby.**

II. (£4.)—ISHERWOOD, FOSTER & STACEY, LTD., Lower Brewery, Maidstone, bay mare, **Molly.**

III. (£3.)—FREMLIN BROS., LTD., Maidstone, **Nero.**

IV. (£2.)—J. LEAVER, High Street, Maidstone, **Strawberry.**

R.—J. LEAVER, **Taffy.**

V.H.C.—R. THOMPSON, 13, Waterlow Road, Maidstone, bay mare, **Baby.**

H.C.—VENN CARR EXORS, 244, Upper Fant Road, Maidstone, **Jim.**

CLASS 50.—*Mare or Gelding, not exceeding* 14 *hands, driven on the* 4*th day of the Show.* [5 entries.].

I. (£15.)—W. W. TAYLOR, Loose, Kent, bay mare, **Bricket Fortuna.**

II. (£7.)—C. H. SIMMONS, Maidstone, brown mare, **Maidstone Pick-em-up.**

III. (£3.)—C. H. SIMMONS, bay mare, **Braishfield Phlox.**

IV. (£2.)—F. SPINK, Leybourne, **Leybourne Lily.**

CLASS 51.—*Mare or Gelding, over* 14 *and not exceeding* 15 *hands, driven on the 4th day of the Show.* [5 entries.]

I. (£15.)—H. J. COLEBROOK, Fulmer, Bucks, gelding, **Argenteau.**

II. (£7.)—S. J. WELLBELOVED, 29, Caterham Road, Lewisham, S.E., bay gelding, **Happy Man.**

III. (£3.)—W. W. TAYLOR, Loose, Kent, chestnut mare, **Carmel Duchess.**

IV. (£2.)—C. H. SIMMONS, Maidstone, dark chestnut mare, **Lady Maidstone.**

R.—R. CHAMBERS, Leybourne, **Sir Eager.**

CLASS 52.—*Mare or Gelding, over* 15 *hands, driven on the* 5*th day of the Show.* (4 entries).

I. (£15.)—H. J. COLEBROOK, Fulmer, Bucks, gelding, **Fulmer Pilot.**

II. (£7.)—C. H. SIMMONS, Maidstone, chestnut gelding, **Burleigh Mey Met-Bey.**

III. (£3.)—R. CHAMBERS, Leybourne, **Viscount Hilden.**

IV. (£2.)—W. W. TAYLOR, Loose, Kent, chestnut, **Carmel Victor.**

MEDAL.

GIVEN BY THE HACKNEY HORSE SOCIETY UNDER CONDITIONS No.50.

A Silver Medal for the best Mare or Gelding exhibited in single Harness in Classes 41 *to* 52, *judged on the* 5*th day of the Show.*

I.—H. J. COLEBROOK, Fulmer, Bucks, gelding **Netherfield Argenteau.**

R.—R. CHAMBERS, Kent, chestnut gelding, **Viscount Hilden.**

CHAMPION PRIZE.

Best Mare or Gelding shown in any of the Open Harness Classes 44 *to* 52, *judged on the* 5*th day of the Show.*

I. (£10.)—H. J. COLEBROOK, Fulmer, Bucks, gelding, **Netherfield Argenteau.**

R.—W. W. TAYLOR, Loose, Kent, bay mare, **Bricket Fortuna.**

JUMPING.

CLASS 53.—*Mare or Gelding,* 15 *hands and over, jumping over the course in the best form on the* 1*st day of the Show.* [9 entries.]

I. (£10.)—J. H. BETTS, Northfield, Birmingham.

II. (£5.)—F. ALLISON, Newbiggin, Penrith, brown gelding.

III. (£2.)—Miss E. CAIRNS, Ashford, grey gelding, **Friary.**

R.—J. W. WICKENS, Sutton Valence, chestnut, **Pussyfoot.**

CLASS 54.—*Mare or Gelding, under* 15 *hands, jumping over the course in the best form on the* 1*st day of the Show.* [5 entries.]

I. (£10.)—T. MAKIN, Newton Farm, near Castleford, Yorks, bay, **Gayboy**

II. (£5.)—Miss I. RITCHIE, Boxhurst, Dorking, chestnut.

III. (£2.)—Major M. F. RADCLIFFE, Cavalry Depot, Canterbury, **Rainbow.**

CLASS 55.—*Mare or Gelding,* 15 *hands and over, jumping over the course in the best form on the* 2*nd day of the Show.* [19 entries.]

I. (£10.)—F. ALLISON. Newbiggin, Penrith, brown gelding.

II. (£5.)—Miss E. CAIRNS, Horton Kirby, Ashford, bay gelding, **Billy**

III. (£2.)—J. W. WICKENS, Sutton Valence, chestnut, **Pussyfoot.**

R.—E. YEARSLEY, Hadlow Down, bay mare, **Lizzie.**

CLASS 56.—*Mare or Gelding, under* 15 *hands, jumping over the course in the best form on the* 2*nd day of the Show.* [5 entries.]

I. (£10.)—Miss I. RITCHIE, Boxhurst, Dorking.

II. (£5.)—T. MAKIN, Castleford, Yorks, bay, **Gay Boy.**

III. (£2.)—Major M. F. RADCLYFFE, Cavalry Depot, Canterbury, Kent, **Rainbow.**

CLASS 57.—*Mare or Gelding, any height, jumping over the course in the best form on the* 3*rd day of the Show.* [14 entries.]

I. (£10.)—F. ALLISON, Newbiggin, Penrith, brown mare, **Temptress.**

II. (£5.)—J. H. BETTS, Northfield, Birmingham.

III. (£2.)—T. MAKIN, Castleford, Yorks, bay, **Gay Boy.**

CLASS 58.—*Mare or Gelding, any height, jumping highest on the* 3*rd day of the Show.* [6 entries.]

Equal I. (£5 13s. 4d.)—T. MAKIN, Castleford, Yorks, bay, **Gay Boy.**

Equal I. (£5 13s. 4d.)—F. ALLISON, Newbiggin, Penrith, brown mare, **Temptress.**

Equal I. (£5 13s. 4d.)—F. ALLISON, brown gelding.

Class 59.—*Mare or Gelding,* 15 *hands and over, jumping over the course in the best form on the* 4th *day of the Show.* [8 entries.]

I. (£15.)—J. W. Wickens, Sutton Valence, **Pussyfoot.**

II. (£7.)—F. Allison, Newbiggin, Penrith, brown mare, **Temptress.**

III. (£3.)—E. Yearsley, Hadlow Down, bay mare, **Lizzie.**

R.—F. Allison, brown gelding.

Class 60.—*Mare or Gelding, under* 15 *hands, jumping over the course in the best form on the 4th day of the Show.* [4 entries.]

I. (£15.)—T. Makin, Castleford, Yorks, bay, **Gay Boy.**

II. (£7.)—Miss I. Ritchie, Boxhurst, Dorking, chestnut mare, **Konkers.**

III. (£3.)—Major M. F. Radcliffe, Cavalry Depot, Canterbury, **Rainbow.**

Class 61.—*Mare or Gelding, any height, jumping highest on the 5th day of the Show.* [7 entries.]

Equal I. (£11.)—T. Makin, Castleford, Yorks, bay, **Gay Boy.**

Equal I. (£11.)—F. Allison, Newbiggin, Penrith, brown gelding.

III. (£3.)—J. W. Wickens, Sutton Valence, **Pussyfoot.**

Champion Class.

Class 62.—*Mare or Gelding, any height, having won a prize in Classes* 53 *to* 61, *jumping over the course in the best form on the 5th day of the Show.* [8 entires.]

I. (£20.)—J. W. Wickens, Sutton Valence, **Pussyfoot.**

II. (£10.)—F. Allison, Newbiggin, Penrith, brown mare, **Temptress.**

III. (£5.) F. Allison, brown gelding.

CATTLE.

DEVON.

Class 63.—*Devon Cow or Heifer, in Milk, calved in or before* 1922. [2 entries.]

I. (£10.)—C. Morris, Highfield Hall, St. Albans and Bishops Lydeard, **Highfield Cherry 2nd** (35224), born 30th January, 1922; s Highfield Gem 2nd (9329), d Northmoor Cherry (31554), s d Gotton Prince 2nd (8070). (Last calf 12th January, 1925).

II. (£5.)—C. Morris, **Highfield Luck** (34229), born 1st March, 1921; s Crazelowman Beechnut (9602), d Northmoor Luck (28836), s d Northmoor Monarch (7807). (Last calf 5th March, 1925).

Class 64.—*Devon Heifer, calved in* 1923. [2 entries.].

I. (£10.)—A. M. Williams, Werrington Park, Launceston, Cornwall, **April Fool,** born 1st April; s Roadwater Goldfinder (10738), d Goldfinder's Duchess II (26804), s d Stockleigh Goldfinder (7268).

CLASS 65.—*Devon Heifer, calved in* 1924. [2 entries.]

I. (£10.)—H.M. THE KING, The Royal Farms, Windsor, **Windsor Sadie**, born 7th March; s Highfield Warrior (11917), d Windsor Sunray (31585), s d Windsor Famous (9522).

II. (£5.)—C. MORRIS, Highfield Hall, St. Albans and Bishops Lydeard, **Highfield Cherry 3rd** (Vol. 48), born 1st January; s Highfield Gem 2nd (9329), d Northmoor Cherry (31554), s d Gotton Prince 2nd (8070).

CLASS 66.—*Devon Bull, calved in or before* 1923. [6 entries.]

I. (£10.)—A. TRIBLE & SONS, Halsdon, Holsworthy, Devon, **Overton Gold Coin II** (10236), born 6th May, 1918, bred by the late - - Huxtable, Overton, Barnstaple; s Captain Butterman (9816), d Overton Myrtle (25912).

II. (£5.)—FRED. W. VERNEY, Avercombe, Bishopsnympton, N. Devon, **Molland Wonder** (12362), born 12th July, 1923, bred by F. Cockram, Barton Molland; s Landkey Cowboy (10650), d Yarnscombe Milkmaid 1st (34686), s d Pubsham Good Boy (6883).

III. (£2.)—A. M. WILLIAMS, Werrington Park, Launceston, **Nerrols Best Man** (12374), born 16th February, 1923, bred by R. Bruford, Nerrols, Taunton; s Highfield Advance (9318), d Nerrols Harebell II (31667), s d Highfield Chieftain (8915).

R.—FRED. W. VERNEY, **Overton Masterpiece** (11152), born 31st May, 1920, bred by A. J. Verney, Overton, Bishops Tawton, Barnstaple; s Stitchpool Favourite's Dairyman (9453), d Overton Myrtle 2nd (25912), s d Stockleigh Masterpiece (6548).

CLASS 67.—*Devon Bull, calved in* 1924. [2 entries.]

I. (£10.)—A. M. WILLIAMS, Werrington Park, Launceston, Cornwall, **Werrington Blue Blood**, born 14th January; s Highfield Gem (8919), d Clampit Blue Blood (28912), s d Ford Plumper (7381).

CHAMPION PRIZES.

GIVEN BY H.R.H. THE PRINCE OF WALES, K.G.

A Challenge Cup, value £30 *for the best Bull exhibited in Class* 66 *or* 67 *to be won three times in succession or four times altogether before becoming the property of the Winner.*

PREVIOUS WINNERS.

1923. A. M. Williams.
1924. Ditto.

GIVEN BY THE DEVON CATTLE BREEDERS' SOCIETY.

Best Animal exhibited in Classes 63 *to* 67. £10.

I.—A. TRIBLE & SONS, Halsdon, Holsworthy, Devon, **Overton Gold Coin II** (10236), born 6th May, 1918, bred by the late — Huxtable, Overton, Barnstaple; s Captain Butterman (9816), d Overton Myrtle (25912).

R.—FRED. W. VERNEY, Avercombe, Bishopsnympton, N. Devon, **Molland Wonder** (12362), born 12th July, 1923, bred by F. Cockram, Barton Molland; s Landkey Cowboy (10650), d Yarnscombe Milkmaid 1st (34686), s d Pubsham Good Boy (6883

SOUTH DEVON.

(£10 towards the Prizes in the South Devon Classes were given by the South Devon Herd Book Society).

CLASS 68.—*South Devon Cow or Heifer, in-Milk, calved in or before* 1922. [4 entries.]

I. (£10.)—H. CHAFFE, Harestone, Brixton, South Devon, **Worswell Gladys XI** (21096), born 2nd July, 1919; s Wedland Champion (6874), d Worswell Gladys 4th, s d Merafield Royal Star. (Last calf 26th December, 1924).

II. (£5.)—LORD MILDMAY OF FLETE, Ermington, Devon, **Flete Carnation** (27260), born 20th March, 1922; s Trehele Forester (9500), d Christine's Maid (12961), s d Ley Marquis (2741). (Last calf 1st January, 1925).

CHALLENGE CUP.

GIVEN BY H.R.H. THE PRINCE OF WALES, K.G.

A Silver Challenge Cup for the best Cow in-Milk in the South Devon Classes, to be won three times in succession or four times altogether before becoming the property of the Winner.

PREVIOUS WINNERS.

1922. R. W. Chaffe.
1923. Lord Mildmay of Flete.
1924. H. Chaffe.

I.—H. CHAFFE, Harestone, Brixton, South Devon, **Worswell Gladys XI** (21096), born 2nd July, 1919; s Wedland Champion (6874), d Worswell Gladys 4th, s d Merafield Royal Star. (Last calf 26th December, 1924).

R.—LORD MILDMAY OF FLETE, Ermington, Devon, **Flete Carnation** (27260), born 20th March, 1922; s Trehele Forester (9500), d Christine's Maid (12961), s d Ley Marquis (2741). (Last calf 1st January, 1925).

CLASS 69.—*South Devon Heifer, calved in* 1923. [4 entries.]

I. (£10.)—LORD MILDMAY OF FLETE, Ermington, Devon, **Flete Countess 3rd** (28889), born 2nd July; s Trehele Forester (9500), d Countess 2nd (18522), s d Lilian's Champion (6016).

II. (£5.)—LORD MILDMAY OF FLETE, **Flete Rosebud** (28893), born 10th August; s Trehele Forester (9500), d Flete Rose (23516), s d Random (7315).

III. (£2.)—J. WAKEHAM, Rowden, Newton Ferrers, S. Devon, **Rowden Priscilla** (29405), born 5th February; s Daisy's Pride (8417), d Pansey (16152), s d Pamflete Eclipse (4510).

R.—Capt. J. T. CORYTON, Pentillie Castle, St. Mellion, E. Cornwall, **Pentillie Milka 2nd,** born 4th February; s Mothecombe Milkman (7245), d Milka (15646), s d Spiddlescombe Challenger (3582).

CLASS 70.—*South Devon Heifer, calved in* 1924. [4 entries.]

I. (£10.)—LORD MILDMAY OF FLETE, Ermington, Devon, **Flete Pink III,** born 19th January; s Trehele Forester (9500), d Flete Pink (23515), s d Random (7315).

II. (£5.)—LORD MILDMAY OF FLETE, **Flete Princess**, born 1st January; s Trehele Forester (9500), d Flete Countess II (25432), s d General (7757).

III. (£2.)—Capt. J. T. CORYTON, Pentillie Castle, St. Mellion, E. Cornwall, **Pentillie Beatrice**, born 19th January; s Mothecombe Milkman (7245), d Princess Beatrice (24725), s d Lavender Boy 2nd (6001).

CLASS 71.—*South Devon Bull, calved in or before* 1923. [5 entries.]

I. (£10.)—Capt. J. T. CORYTON, Pentillie Castle, St. Mellion, E. Cornwall **Mothecombe Milkman** (7245), born 29th January, 1917, bred by J. M. Wroth, Harbeaton, Plymouth; s Brownstone Laddie (4774), d Kitty (11346), s d Merafield Paymaster (3491).

II. (£5.)—W. L. HOSKING & SONS, Fentongollan, Probus, Cornwall, **Fentongollan Apollo**, born 5th September, 1919; s Palston Ruler (5548), d Kitty (9352), s d Ruby's Hero (2751).

III. (£2.)—J. P. CUNDY & SONS, Estover, Crownhill, near Plymouth, **Milkman**, born 27th January, 1921, bred by S. Argent, Kingsbridge; s Napoleon, d Milkmaid.

CLASS 72.—*South Devon Bull, calved in* 1924. [3 entries.]

I. (£10.)—J. WAKEHAM, Rowden, Newton Ferrers, South Devon, **Rowden Eustace 11th**, born 26th February; s Painsford Eustace (9923), d Lovely 1st (20747), s d Napoleon (6061).

II. (£5.)—J. P. CUNDY & SONS, Estover, Crownhill, near Plymouth, **Estover Sir Frederick**, born 24th June, bred by F. Viggers, Plympton; s Prawle Rentpayer, d Curley.

III. (£2.)—J. M. ROBERTS, Sparnock, Kea, Truro, Cornwall, **Fancier**, born 5th April; s Sparnock Hero (9454), d Kitty (14473), s d Leyman (2406).

SHORTHORN.

CLASS 73.—*Cow or Heifer, in-Milk, calved in or before* 1922. [2 entries.]

I. (£10.)—Sir C. CHUBB, Bart., Bapton Manor, Codford, Wilts, roan, **Princess Margaret**, born 5th January, 1922, bred by J. Deane Willis, Stratton Park, Stratton St. Margarets; s Billington Snowstorm (154027), d Princess Mary (Vol. 60, p.780), s d Musical Mac (112632). (Last calf 19th October, 1924).

II. (£5.)—HON. MRS. BRUCE WARD, Godinton, Ashford, Kent, roan, **Godinton Jilt** (Herd Book No. 31382), born 4th February, 1921; s Dewlaps Royal Sovereign (125170), d Adbolton Jilt (Vol. 61, p.794), s d Adbolton Thalia King 2nd (110696). (Last calf 27th January, 1925).

CLASS 74.—*Shorthorn Heifer, calved in* 1923. [2 entries.]

I. (£10.)—H.M. THE KING, The Royal Farms, Windsor, dark roan, **Windsor Carnation**, born 22nd April; s Edgcote Flatterer (125374), d Hathaway 7th, s d Proud Victor (103447).

II. (£5.)—A. W. MACONOCHIE, Cudham, Kent, roan, **Cudham Violet**, born 29th March: s Cudham Prince Augustus (170765), d Sittyton Violet 19th, s d Collynie Advocate (141694).

CLASS 75.—*Shorthorn Heifer, calved in* 1924. [8 entries].

I. (£10.)—Sir B. GREENWELL, Bart., Marden Park, Woldingham, Surrey, red and little white, **Marden Crocus**, born 17th January : s Balcairn Warden (168707), d Godinton Crocus (8799), s d Dewlap's Royal Sovereign (125170).

II. (£5.)—J. HEATON, O.B.E., Low Startforth Hall, Barnard Castle, white **Startforth Augusta**, born 23rd April ; s Pelupai Air Lord, d Balthayock Augusta 32nd, s d Norseman of Harviestown (150829).

III. (£2.)—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., dark roan, **Basildon Princess Mary 3rd**, born 8th January ; s Collynie Grand Prince (154921), d Princess Pat (Vol. 64, p.1390), s d Edgcote Courtier (130818).

H.C.—LORD GLANELY, Lackham, Lacock, Wilts., white, **Lackham Orange Blossom**, born 9th February : s Brandsby's Undine King 2nd (161556), d Fairlawne Orange Blossom 4th, s d Collynie Clipper King (135816).

C.—H.M. THE KING, The Royal Farms, Windsor, red, **Windsor Luxury 2nd**, born 21st March ; s Royal Gauntlet (159047), d Mullantean Luxury 2nd, s d Ulster Scot (139828).

CLASS 76.—*Shorthorn Bull, calved in* 1921 *or* 1922. [2 entries.]

I. (£10.)—Hon. MRS. BRUCE WARD, Godinton, Ashford, Kent, dark roan, **Balcairn Eagle** (168680), born 8th April, 1921, bred by F. L. Wallace, Balcairn, Oldmeldrum ; s Earl of Kingston (120041), d Edgcote Doris (Vol. 62, p.773), s d Ascott Magnet (118612).

II. (£5.)—Sir B. GREENWELL, Bart., Marden Park, Woldingham, Surrey, white, **Silver Cloud** (185118), born 17th April, 1922, bred by R. H. Green, Willesborough, Ashford, Kent ; s Godinton Triumph (156068), d Bilsington Pink 9th, s d Tongswood Clarionet (139740).

CLASS 77.—*Shorthorn Bull, calved in* 1923—[6 entries.]

I. (£10.) Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., white, **Basildon Royal 2nd** (187225), born 15th January ; s Collynie Orient (170462), d Basildon Rosewood (Vol. 64, p.1132), s d Scarabe (128047).

II. (£5.)—A. W. MACONOCHIE, Cudham, Kent, red, **Cudham Dawn** (188867), born 3rd February ; s Cudham Dane (162578), d Sittyton Clipper 6th, s d Primrose Archer (106551).

III. (£2.) Sir B. GREENWELL, Bart., Marden Park, Woldingham, Surrey, roan. **Clipper Monarch** (188528), born 11th April, bred by Bilsington Shorthorn Co., Bilsington Priory Home Farm, Ashford, Kent ; s Godinton Gregorian (163582), d Clipper Charity, s d Boquhan Prince Regent (141104).

V.H.C.—Hon. Mrs. BRUCE WARD, Godinton, Ashford, Kent, white, **Godinton Proud Earl** (190055), born 25th October ; s Pellipar Air-Boss (165820), d Proud Actress 2nd (Vol. 65, p.1089), s d Hean Monitor (131417).

H.C.—LORD GLANELY, Lackham, Lacock, Wilts., roan, **Aldsworth Guard**, born 16th April, bred by W. Garne, Ablington, Fairford, Glos. ; s Cerney Oyster (162053), d Aldsworth Golden Drop, s d Augusta Diamond 3rd (123964

CLASS 78.—*Shorthorn Bull, calved in* 1924. [9 entries.]

I. (£10.)—Sir C. CHUBB, Bart., Bapton Manor, Codford, Wilts., roan, **Roan Robin**, born 5th March, bred by R. A. Smith, Wester Lovat, Beauty; s Narmoor Cock Robin (157946), d Augusta's Pride 2nd (42627), s d Collynie Proud Viscount (162350).

II. (£5.)—J. HEATON, O.B.E., Low Startforth Hall, Barnard Castle, white, **Startforth Loyalist**, born 10th February; s Fairlawne Air-Raid (148740), d Startforth Lavender Crystal, s d Collynie Lavender King (141709).

III. (£2.)—LORD GLANELY, Lackham, Lacock, Wilts., red and little white, **Lackham Clipper King**, born 22nd March; s Brandsby's Undine King 2nd (161556), d Fairlawn Clipper 13th, s d Collynie Clipper King (135816).

V.H.C.—Mrs. E. JEWELL, Henden Manor, Ide Hill, Sevenoaks, Kent, roan, **Colham Cherub** (Vol. 71), born 20th January, bred by Sir Hugh Levick, K.B.E., Manor House, Castle Combe, Chippenham; s Richford Orangeman (166469), d Latton Missie 22nd (23096), s d Cudham Archer (148254).

H.C.—H.M. THE KING, The Royal Farms, Windsor, red, **Windsor President**, born 6th March; s Cudham Prince Augustus (170765), d Balthayock Augusta 2nd, s d Ivo of Cluny (99211).

C.—T. S. COLEMAN, Goss Hall, Ash Canterbury, red roan, **Gosshall Viking** born 28th April; s Bletchley Viking (154087), d Kora 113th (Vol. 60, p.928), s d Esmond (111713).

CHAMPION PRIZE.

GIVEN BY THE SHORTHORN SOCIETY.

Best Shorthorn Bull in Classes 76 *to* 78 *entered in, or eligible for entry in Coates's Herd Book, with Silver Medal to the Breeder.*

I. (£10.)—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., white, **Basildon Royal 2nd** (187225), born 15th January; s Collynie Orient (170462), d Basildon Rosewood (Vol. 64, p.1132), s d Scarabe (128047).

R.—Sir C. CHUBB, Bart., Bapton Manor, Codford, Wilts, roan, **Roan Robin**, born 5th March, bred by R. A. Smith, Wester Lovat, Beauty; s Narmoor Cock Robin (157946), d Augusta's Pride 2nd (42627), s d Collynie Proud Viscount (162350).

DAIRY SHORTHORN.

(The First Prizes in Classes 79 and 80 (and a Silver Medal to the Breeder of the winners) were given by the Shorthorn Society and the First Prize in Class 84 by the Dairy Shorthorn Association).

CLASS 79.—*Pedigree Cow, in-Milk, calved in or before* 1921, *eligible for, and entered in Coates's Herd Book, or pedigree sent for such entry previous to the Show, and not having previously won a similar prize offered by the above-named Society in* 1925, *milked in the ring before judging, under conditions* 59. [9 entries.]

I. (£10.)—H. CALVERT, Bourne Place, Hildenborough, red, **Iford Jasmine 10th**, born 11th December, 1919, bred by J. & H. Robinson, Iford, Lewes, Sussex; s Iford Waterloo Duke 3rd (131571), d Iford Jasmine 3rd, s d Iford General (126123). (Last calf 29th January, 1925).

II. (**£5.**)—T. L. MARTIN, Ashe Warren, Overton, Hants, roan, **Somerford Barrington Duchess**, born 20th October, 1916, bred by G. Bickford, Somerford, Brewood, Staffs.; s Puddington Crispin (127505), d Duchess of Barrington 13th, s d Special Stamp (100731).

CLASS 80.—*Dairy Shorthorn Cow, in-Milk, calved in or after* 1922 *eligible for, and entered in Coates's Herd Book, or pedigree sent for such entry previous to the Show, and not having previously won a similar prize offered by the above-named Society in* 1925, *milked in the Ring before judging, under Conditions* 59. [6 entries.]

I. (**£10.**)—J. G. PEEL, Peover Hall, Over Peover, Knutsford, Cheshire, red and little white, **Overpeover Musical**, born 11th June, 1922; s Foundation Stone (105524), d Coombebank Musical (Vol. 65, p.974), s d Kingsthorpe Dreadnought (137391).

CLASS 81.—*Pedigree Dairy Shorthorn Heifer, calved in* 1923. [8 entries.]

I. (**£10.**)—H. CALVERT, Bourne Place, Hildenborough, red roan, **Wicklesham Lily**, born 14th January, bred by Capt. A. Stevens, Wicklesham Lodge, Farringdon, Berks.; s Anderson Eagle (160735), d Kingswood Lily, s d Bessboro' Polonius (140959).

II. (**£5.**) J. E. FURNESS, Haroldslea, Horley, Surrey, red and white, **Haroldslea Cherry**, born 14th July; s Nelson Lee (174374), d Gilmorton Cherry (Vol. 61, p.1021), s d Lawrenny Foggothorpe (116188).

III. (**£2.**) F. WILLOUGHBY, Highlands Farm, Hailsham, Sussex, roan **Hailsham Lady Dewdrop**, born 18th April; s Greadon Little John (172157), d Lady Clara 2nd, s d Wedding Gift (128775).

R.—Lt.-Col. F. H. D. C. WHITMORE, C.M.G., D.S.O., Orsett Hall, Grays, Essex, roan, **Orsett Gwynne 4th**, born 5th October; s Kelmscott Imperialist 20th (156818), d Singleton Gay (63/870), s d Prince Imperial (127411).

H.C.—Lt.-Col. F. H. D. C. WHITMORE, C.M.G., D.S.O., roan, **Orsett Diana 8th**, born 11th April; s Kelmscott Imperialist 20th (156818), d Singleton Diligent (63/869), s d Polar Star (109644).

(The Prizes in Class 82 were given by E. Ezra, Esq., of Lock, Partridge Green, Sussex.

CLASS 82.—*Pedigree Dairy Shorthorn Heifer, calved in* 1924, *eligible for and entered in Coates's Herd Book or pedigree sent for such entry previous to the Show, subject to Conditions No.* 60. [5 entries.]

I. (**£10.**)—J. P. MORGAN, Wall Hall, Aldenham, Watford, roan, **Aldenham Nelly Lee 4th**, born 7th August; s Aldenham Lord Barrington (177679), d Nelly Lee A2 (Vol. 61, p.1021), s d Lawreny Foggothorpe (116188).

II. (**£5.**)—F. W. MORLEY, Biddestone Manor, Chippenham, roan and little white, **Beanacre Lizzie** (Vol. 71), born 3rd April, bred by Hon. Paul Methuen, Beanacre Manor, Melksham; s Tockenham Keystone 15th (159979), d Lizzie 13th (1517), s d Hawker Lord (136996).

III. (£2.)—F. C. TIARKS, Foxbury, Chislehurst, Kent, red and little white, **Webbington Cream 3rd**, born 14th March ; s Eaton Diamond Gift (171328), d Webbington Cream II, s d Webbington Squash (146239).

R.—F. C. TIARKS, red, **Webbington Daisy II**, born 30th March ; s Eaton Diamond Gift (171328), d Highworth Daisy II, s d Prince Seraphine (132848).

C.—Lt.-Col. A. DELME-RADCLIFFE, D.S.O., Shenley House Farm, Headcorn, Kent, roan, **Beult Magdalene**, born 18th April ; s Kelmscott Dairyman 91st, d Bombers Magdalene, s d Bessborough Nestor (135121).

CLASS 83.—*Dairy Shorthorn Bull, calved before* 1924. [8 entries.]

I. (£10.)—J. P. MORGAN, Wall Hall, Aldenham, Waftord, roan, **Buckswood, Fusilier**, born 20th May, 1923, bred by Miss N. Mossland, Buckswood, Crawley, Sussex ; s Histon Baron Lee (164070), d Miss Foggothorpe 12th (972), s d Barrington Chief (134987).

II. (£5.)—Lt.-Col. W. M. PRYOR, D.S.O., Lannock Manor, Weston, Stevenage, Herts., red and little white, **Lannock Hero** (173240), Vol. 68, p.293), born 2nd May, 1921 ; s Creme-de-Menthe (119683), d Betty 24th (Vol. 64, p.990), s d Cranford Regulator (119677).

III. (£2.)—H. J. WATSON, Hermongers, Rudgwick, Sussex, red and little white, **Babraham Prince**, born 24th May, 1923, bred by C. R. W. Adeane, Babraham Hall, Cambridge ; s Lord Lee 2nd (121257), d Babraham Priceless 2nd (V.64, p.564), s d Tockenham Minstrel (133949).

R.—R. H. FOA, Holywell Park, Wrotham, Kent, roan, **Bampton Conjuror 21st**, born 20th September, 1923, bred by R. Southby, Bampton, Oxon ; s Kelmscott Conjuror 21st (149648), d Bampton Clare (Vol. 65, p.1109), s d Corner Stone (135904).

V.H.C.—Capt. A. R. J. CYSTER, Gate Court, Northiam, Sussex, roan, **Dairy Lad** (180011 T.A.F.—D.13), born 12th October, 1922, bred by F. Taylor, Beckside, Uungrisdale, Troutbeck ; s Uungrisdale Duke (165512), d Nasby Countess, s d Kingsthorpe Darlington (131773).

H.C.—Lt.-Col. A. DELME-RADCLIFFE, D.S.O., Shenley House Farm, Headcorn, Kent, red, **Kelmscott Conjuror 61st** (181981), born 10th June, 1922, bred by R. W. Hobbs & Sons, Kelmscott, Lechlade, Glos. ; s Kelmscott Acrobat 4th (126217), d Barrington Duchess 55th, s d Duke of Acomb (119958).

CLASS 84.—*Pedigree Dairy Shorthorn Bull, calved in* 1924, *entered or pedigree accepted for entry in Coates's Herd Book, subject to Conditions No.* 60. [10 entries.]

I. (£10.)—F. W. MORLEY, Biddestone Manor, Chippenham, roan, **Biddestone Pirate**, born 19th January ; s Preshute Bandit (151128), d Cockerham Purity (Vol. 61, p.933), s d Spency Beau (117836).

II. (£5.)—J. M. BAINBRIDGE, Great Chilmington, Great Chart, Kent, dark roan, **Great Chart Major**, born 6th May ; s Histon Wild Prince 3rd (172496), d Rose Princess (Vol. 64, p.1241), s d Bugler (135495).

III. (£2.)—H. CALVERT, Bourne Place, Hildenborough, Kent, roan, **Bourneplace Lord Price**, born 12th February ; s Babraham Lord Price (140574), d Longhills Moonstone (Vol. 62, p.1095), s d Duke of Darlington (115163).

R.—J. G. Peel, Peover Hall, Over Peover, Knutsford, Cheshire, **Overpeover St. Michael,** born 7th June ; s Eaton Augustin (171314), d Backwood Seraphina (19514), s d Pershute Herald (151132).

H.C.—Sir M. Collet, Bart., St. Clere, Kemsing, near Sevenoaks, Kent, red and little white, **St. Clere Ringleader,** born 21st April; s Haddon Nonesuch 2nd (172198), d St. Clere Belle (Vol. 63, p.745), s d Bilsington Leader (119035).
—J. P. Morgan, Wall Hall, Aldenham, Watford, roan, **Aldenham Kirklevington Lord,** born 27th February ; s Cantab Jocelyns Armistice (147744), d Kirklevington Lady 2nd (Vol. 64, p.1228), s d Barrister 2nd (129524).

C.—F. C. Tiarks, Foxbury, Chislehurst, Kent, dark roan, **Webbington Happy Warrior,** born 18th June ; s Webbington Happy Thought (186036), d Webbington Lemon II (Vol. 68, p.1298), s d Kelmscott Viscount (131702).

HEREFORD.

Class 85.—*Hereford Cow or Heifer, in-Milk, calved in or before* 1922. [3 entries.]

I. (**£10.**)—D. P. Barnett, Walterston, Llancarfan, Cowbridge, **Lux,** born 22nd December, 1914, bred by K. W. Milnes ; s Ony Marble (26352), d Lottery, s d Sir James (26489). (Last calf 21st December, 1924).

II. (**£5.**) W. G. Buchanan, Manor House Farm, Abergavenny, **Frolic,** born 18th November, 1917, bred by T. R. Thompson, Bean House, near Malvern ; s Leen Vistula (31664), d Rebecca (Vol. 49, p.872), s d Rougemont 2nd (27841), (Last calf 16th December, 1924).

III. (**£2.**) The Dinam Estates Co. (Mr. David Davies, M.P.), Llandinam Hall Farm, Llandinam, Co. Montgomery, **Dinam Agatha,** born 4th January, 1922 ; s Resolute II (39895), d Agate (Vol. 50, p.945), s d Lean Vistula (31664). (Last calf 27th March, 1925).

Class 86.—*Hereford Heiford, calved in* 1923. [5 entries.]

I. (**£10.**)—Sir M. Levy, Bart., Great Glen, Leicester, **Glen Dasher,** born 4th March ; s Bounds Kyrle, d Nan, s d Langoed Dandy.

II. (**£5.**)—H.M. The King, The Royal Farms, Windsor, **Lavender Lass,** born 5th January ; s Lulsley Statesman (37327), d Lovely 2nd, s d Paymaster (32892).

III. (**£2.**)—T. W. Davies, The Cefn Farm, Pontypridd, **Cefn Rosemary 6th,** born 1st February ; s Pyon's Victor (37791), d Cefn Rosemary 5th, s d Clive Hope 3rd (36374).

R.—T. W. Davies, **Cefn Primula,** born 9th May ; s Pyon's Victor (37791) d Primula, s d King Character 3rd (26946).

C.—D. P. Barnett, Walterston, Llancarfan, Cowbridge, **Mayberry,** born 27th April ; s Walterston Sam (38309), d Hackberry, s d Tramp (28785).

Class 87.—*Hereford Heifer, calved in* 1924. [3 entries.]

I. (**£10.**)—H.M. The King, The Royal Farms, Windsor, **Peggy,** born 29th February ; s Lulsley Statesman (37327), d Primula, s d Paymaster (32892).

II. (**£5.**)—H.M. The King, **Eunice,** born 9th March ; s Lulsley Statesman (37327), d Envy, s d Admiral Beatty (31222).

CHAMPION PRIZE.

GIVEN BY THE HEREFORD HERD BOOK SOCIETY.

Best Registered Cow or Heifer in Classes 85 *to* 87.

I. (£10.)—Sir M. LEVY, Bart., Great Glen, Leicester, **Glen Dasher**, born 4th March ; s Bounds Kyrle, d Nan, s d Langoed Dandy.

R.—H.M. THE KING, The Royal Farms, Windsor, **Lavender Lass**, born 5th January ; s Lulsley Statesman (37327), d Lovely 2nd, s d Paymaster (32892).

CLASS 88.—*Hereford Bull, calved in* 1921 *or* 1922. [3 entries.]

I. (£10.)—THE DINAM ESTATES CO. (Mr. David Davies, M.P.), Llandinam Hall Farm, Llandinam, Co. Montgomery, **Dinam Magician** (42205), born 17th January, 1922 ; s Resolute II (39895), d Miranda (Vol. 44, p.358), s d Lord Lieutenant (22323).

II. (£5.)—H.M. THE KING, The Royal Farms, Windsor, **Oyster Prince**, born 7th January, 1921, bred by D. P. Barnett, Walterston, Llancarvan, near Cowbridge, Glam. ; s Walterston Sam, (38309), d Shell, s d Royal Star (33037).

III. (£2.)—Capt. R. T. HINCKES, Mansel Court, Hereford, **Enterprize** (40901), born 2nd January, 1921, bred by S. Robinson, The Ovals, Kingston, Herefordshire ; s Mansel Handyman (33954), d Pearly (Vol. 50, p.881), s d Gainsborough (28303).

CLASS 89.—*Hereford Bull, calved in* 1923. [3 entries.]

I. (£10.)—J. MEDLICOTT, Court Farm, Bodenham, Herefordshire, **Bodenham Energy** (43341), born 27th February, bred by Mrs. E. Medlicott, Court Farm, Bodenham ; s Eaton Leader (40882), d Bodenham Doreen 5th (Vol. 53, p.642), s d Admiral Gipsey (54527).

CLASS 90.—*Hereford Bull, calved in* 1924. (1 entry). *First prize,* £10.—*second,* £5—*third,* £2.

[NO EXHIBIT.]

CHAMPION PRIZE.

GIVEN BY THE HEREFORD HERD BOOK SOCIETY.

Best Registered Hereford Bull in Classes 88 *to* 90.

I. (£10.)—THE DINAM ESTATES CO. (Mr. David Davies, M.P.), Llandinam Hall Farm, Llandinam, Co. Montgomery, **Dinam Magician** (42205), born 17th January, 1922 ; s Resolute II (39895), d Miranda (Vol. 44, p.358), s d Lord Lieutenant (22323).

R.—H.M. THE KING, The Royal Farms, Windsor, **Oyster Prince**, born 7th January, 1921, bred by D. P. Barnett, Walterston, Llancarvan, near Cowbridge, Glam. ; s Walterston Sam (38309), d Shell, s d Royal Star (33037).

SUSSEX.

(£32 towards the Prizes in the Sussex Classes and the Silver Medals were given by the Sussex Herd Book Society.

CLASS 91.—*Sussex Cow or Heifer, in-Milk, calved in or before* 1922. [10 entries]

I. (£10.)—Col. F. S. W. CORNWALLIS, Linton Park, Linton, Maidstone, **Linton Fuschia** (18527), born 13th March, 1919; s Milgate Arab 2nd (4357), d Linton Vine 2nd (16773), s d Linton 2nd (3291). (Last calf 25th March, 1925).

II. (£5.)—E. EZRA, Lock, Partridge Green, Sussex, **Drungewick Daisy 16th** (19107), born 26th February, 1920, bred by the late E. E. Braby, Drungewick Manor, Rudgwick, Sussex; s Drungewick A.1. 7th (4582), d Drungewick Daisy 14th (16712), s d Drungewick Marksman 3rd (3274). (Last calf 15th January, 1925).

III. (£2.)—J. R. BETTS, Greenhill Farm, Otham, Maidstone, **Prebble Playful** (18463), born 16th May, 1919, bred by C. Gordon Neame, Copton Manor, Faversham, Kent; s Tutsham Nero 2nd (3526), d Copton Prebble 37th (17011), s d Copton Old Preston 1st (3450). (Last calf 24th February, 1925).

R.—J. R. BETTS, **Otham Lady 2nd** (19718), born 21st June, 1921; s Ticehurst Chevalier 6th (4854), d Sheldwick Lady 33rd (16044), s d Nash Premier 6th (3446).

V.H.C.—W. PHILLIPS, Hermitage Farm, Wateringbury, Kent, **Oakover Poppy 1st**, born 1st February, 1919, bred by C. Newington, Oakover, Ticehurst, Sussex; s Oakover Gold 17th, d Foxhunt Poppy, s d Apsley President. (Last calf 4th January, 1925).

H.C.—J. R. BETTS, **Halden Place Careless 2nd** (20799), born 1st March, 1922, bred by M. Kemp, Halden Place, Rolvenden, Kent; s West Park K.C. (5353), d County Princess (18165), s d Sussex Statesman (4001). (Last calf 27th January, 1925).

C.—F. LENEY, Eaglesden, Benenden, Kent, **Ridge Gentle** (19707), born 7th March, 1921, bred by G. R. Bennett, Old House, West Hoathly, Sussex: s Sundrige (4573), d North Chapel Rose (14064), s d Reformer (2519). (Last calf 6th February, 1925).

CLASS 92—*Sussex Heifer, calved in* 1923—[15 entries.]

I. (£10.)—L. O. JOHNSON, Peppers, Ashurst, Sussex, **Ridge Bouncing Beauty 2nd** (21058), born 27th January, bred by Lt. G. R. Bennett; s Ridge Eclipse (5403), d Lynwick Beauty 24th (16663), s d Lynwick Rufus 2nd (3563).

II. (£5.)—E. EZRA, Lock, Partridge Green, Sussex, **Ridge Charmer 2nd** (21059), born 28th January, bred by G. R. Bennett, Old House, West Hoathley, Sussex; s Avisford Prince (5484), d Sheldwick Knelle Charmer (17851), s d Nash Masterpiece 2nd (3723).

III. (£2.)—J. R. BETTS, Greenhill Farm, Otham, Maidstone, **Otham Twin 2nd** (21071), born 22nd February; s Ticehurst Chevalier 6th (4854), d Ticehurst Prebble Twin 3rd (20404), s d Golden Noble 9th (3877).

R.—C. NEWINGTON, Oakover, Ticehurst, Sussex, **Oakover Favourite 9th** (21560), born 19th January; s Mabledon Lad (4326), d Oakover Favourite 1st (17030), s d Oakover Toreador 5th (3472).

V.H.C.—J. R. BETTS, **Otham Lumpy 5th** (21067), born 6th April; s Ticehurst Chevalier 6th (4854), d Ockham Lumpy 7th (17855), s d Golden Noble 9th (3877).

H.C.—F. C. STICKELS, Brooker Farm, Newchurch, **Brooker Viol 2nd** (21684), born 2nd April; s Ripton Rover (4554), d Newick Viol 3rd (18974), s d Lock Bold (4511).

C.—A. L. MERCER, Norton Court, near Sittingbourne, **Frognel Prebble Rose 2nd** (21525), born 18th May; s St. Albans 52nd (5263), d Mumford Prebble Rose 2nd (17106).

CLASS 93.—*Sussex Heifer, calved in* 1924. [11 entries.]

I. (£10.)—E. EZRA, Lock, Partridge Green, Sussex, **Lock Daisy**, born 12th February; s Jacobite (5116), d Drungewick Daisy 16th (19107), s d Drungewick A.1 7th (4582).

II. (£5.)—W. PHILLIPS, Hermitage Farm, Wateringbury, Kent, **Hermitage Darkey**, born 24th April; s Hardres Gold, d Lock Darkey 28th, s d Birling Geoffrey 2nd.

III. (£2.)—F. C. STICKELS, Brooker Farm, Newchurch, Kent, **Lady Jayes 21st**, born 16th January; s Golden Miller (4925), d Lady Jayes 14th (17102), s d Birling Caretaker (3730).

R.—F. C. STICKELS, **Brooker Bold Bell 8th**, born 7th January; s Brooker Bell Rover (5834), d Brooker Bold Bell 5th (19004), s d Brooker Beau (3982).

V.H.C.—J. R. BETTS, Greenhill Farm, Otham, Maidstone, **Otham Twin 3rd**, born 10th June; s Otham Chevalier (5408), d Ticehurst Prebble Twin 3rd (20404), s d Golden Noble 9th (3877). —J. R. BETTS, **Otham Princess Knelle**, born 24th May; s Otham Chevalier (5408), d Princess Knell (18464), s d St. Albans 33rd (3658).

H.C.—Col. G. L. COURTHOPE, M.C., M.P., Whiligh, Sussex, **Whiligh Polly 39th**, born 23rd March, ; s Normanhurst Albert (H.B. No. 4864), d Whiligh Majesty (H.B. No. 14160), s d Orchardmain's Confidence (H.B. No. 2486).

SILVER MEDAL.

Best Sussex Cow or Heifer in Classes 91 *to* 93.

I.—Col. F. S. W. CORNWALLIS, Linton Park, Linton, Maidstone, **Linton Fuschia** (18527), born 13th March, 1919; s Milgate Arab 2nd (4357), d Linton Vine 2nd (16773), s d Linton 2nd (3291). (Last calf 25th March, 1925).

R.—L. O. JOHNSON, Peppers, Ashurst, Sussex, **Ridge Bouncing Beauty 2nd** (21058), born 27th January, bred by Lt. G. R. Bennett; s Ridge Eclipse (5403), d Lynwick Beauty 24th (16663), s d Lynwick Rufus 2nd (3563).

CLASS 94.—*Sussex Bull, calved in or before* 1923. [5 entries.]

I. (£10.)—J. R. BETTS, Greenhill Farm, Otham, Maidstone, **Otham Chevalier** (5408), born 17th June, 1923; s Ticehurst Chevalier 6th (4854), d Ockham Lumpy 4th (15597), s d Ockham Prince (3367).

II. (£5.)—W. PHILLIPS, Hermitage Farm, Wateringbury, Kent, **Hermitage Mariner**, born 22nd January, 1923; s Bolebroke Peaceful Mariner, d Oakover Buscom, s d Oakover Gold 17th.

III. (**£2.**)—C. Newington, Oakover, Ticehurst, Sussex, **Oakover Lad 18th** (5819), born 27th April, 1922 ; s Mabledon Lad (4326), d Favourite 21st (13061), s d Orchardmain's Squire (2475).

R.—J. R. Betts, **Ridge Sundial** (5860), born 11th May, 1923, bred by G. R. Bennett, Old House, West Hoathley, Sussex ; s Sundridge (4573), d Lock Heedless 6th (15992), s d North Chapel Premier (2645).

V.H.C.—A. L. Mercer, Norton Court, near Sittingbourne, **Knowlton Monarch 2nd** (6067), born 9th March, 1923, bred by Capt. E. Speed, Knowlton Court, Kent ; s Imperator (5100), d Birling Careless 2nd (18262), s d Birling Delight (3731).

Class 95.—*Sussex Bull, calved in* 1924. [9 entries.]

I. (**£10.**)—L. O. Johnson, Peppers, Ashurst, Sussex, **King's Barn Sunbright** (Vol. 401), born 5th January ; s Sunbridge (4573), d Avisford Heedless 3rd (19881), s d Red Miller (4918).

II. (**£5.**)—Major J. B. Warren, Handcross Park, near Hayward's Heath. **Handcross Lad**, born 28th January ; s Oakover Lad 10th (5340), d Dale Graceful 1st (19264), s d Browning's Prince 7th.

III. (**£2.**)—C. Newington, Oakover, Ticehurst, Sussex, **Oakover Lad 25th**. born 8th March ; s Mabledon Lad (4326), d Oakover Favourite 1st (17030). s d Oakover Toreador 5th (3472).

R.—J. R. Betts, Greenhill Farm, Otham, Maidstone, **Otham Dogrose 2nd**. born 30th April ; s Otham Dogrose (5667), d Otham Lady 2nd (19718), s d Ticehurst Chevalier 6th (4854).

V.H.C.—Col. F. S. W. Cornwallis, Linton Park. Linton, Maidstone, **Linton Milgate**, born 14th March ; s Marlands Prince, d Valotta 2nd, s d Milgate Arab 2nd.

H.C.—E. & B. Kelsey, Wickham Court, Canterbury, **Wickham Boy 5th**. born 27th January ; s Sheldwich Boy (4708), d Wickham Court Beauty 53rd (18801), s d Ripton Major 3rd (4278).

C.—J. R. Betts, **Otham Major**, born 18th September ; s Otham Chevalier (5408), d Merry Marigold (17545), s d Lock Chang 2nd (3773).

SILVER MEDAL.

Best Sussex Bull in Classes 94 *and* 95.

I.—J. R. Betts, Greenhill Farm, Otham, Maidstone, **Otham Chevalier** (5408), born 17th June, 1923 ; s Ticehurst Chevalier 6th (4854). d Ockham Lumpy 4th (15597), s d Ockham Prince (3367).

R.—L. O. Johnson, Peppers, Ashurst, Sussex, **King's Barn Sunbright** (Vol. 401), born 5th January ; s Sunbridge (4573), d Avisford Heedless 3rd 19881), s d Red Miller (4918).

BRITISH FRIESIAN.

(£34 towards the Prizes in the Friesian Classes were given by the British Friesian Cattle Society, and animals entered must have been registered in the B.F.C.S. Herd Book proper. those registered in Supplementary Section not being eligible.)

CLASS 96.—*British Friesian Cow or Heifer, any age, in-milk.* [14 entries.]

I. (£10.)—G. HOLT-THOMAS, Northdean House, Hughenden, High Wycombe, Bucks, **Beccles Peggotty** (23426), born October 2nd, 1916, bred by F. W. D. Robinson, Roos Hall, Beccles; s Beccles (imp.) Lodewijk (3501), d Beccles Colantha (13930), s d Pebsham Blair Athol (555). (Last calf 3rd September, 1924).

II. (£5.)—A. & J. BROWN, Hedges Farm, St. Albans, **Hedges Gemke Brand** (24960), born 14th October, 1916; s Hedges (impt.) Fokke 2nd (3993), d Hedges Brands Gem (14982), s d Hedges Highlander (1443). (Last calf 24th February, 1925).

III. (£2.)—THE HACHE HERD, Muntham Home Farm, Findon, Worthing, Sussex, **Hache Berbram Umbra** (45510), born 8th April, 1920; s Terling (imp.) Vic Bertus (4541), d Colton Bram III (28010), s d Colton (imp.) Vic Bram (3705).

R.—G. HOLT-THOMAS, **Colton Sunray** (32650), born 31st October, 1918, bred by H. Brown, Colton Mains, Dunfermline; s Terling (imp.) Vic Bertus (4541), d Colton Sunset (6868), s d Colton Puritan (95). (Last calf 19th March, 1925).

V.H.C.—A. &. J. BROWN, **Hedges Albert's Princess 4th** (52462), born 15th December, 1921; s Petygards (imp.) d Bles Albert (4321), d Hedges Fokrigg Princess 2nd (29128), s d Hedges (imp.) Fokke 2nd (3993). (Last calf 5th March, 1925).

H.C.—F. SYKES, Richings Park, Colnbrook, Bucks, **Kingswood Ceces Daisy** (39928), born 21st November, 1919, bred by H. Hale, Oxted, Surrey; s Hedges Second Series (P.I. 6427), d Hedges Hawkrigg Daisy (20342), s d Brookside Buttercups Boy (1015). (Last calf 12th February, 1925).

CLASS 97. *British Friesian Heifer, not in-milk, calved in* 1923. [14 entries.]

I. (£10.)—G. HOLT-THOMAS, Northdean House, Hughenden, High Wycombe, **Northdean Barbara** (P.I. 74624), born 15th September; s Northdean (imp. 1922), Marthus Beatty (21081), d Clockhouse (imp. 1922) Barbara (60100), s d Nels Rust General Burger (F.H.B. 817).

II. (£5.)—Capt. J. CHRISTIE, M.C., Glyndebourne, Ringmer, Lewes, **Glyndebourne Breeze** (71578), born 29th June; s Dunninald Haeayemairschaap (P.I. 7699), d Terling Breeze 8th (36182), s d Lavenham (imp.) Gysbrecht (4077).

III. (£2.)—G. T. EATON, Thurston Hall, Framfield, **Thurston Karel Verbena** (77008), born 20th May; s Kirkhill Imp. Karel II (4051), d Petygards Ciros (26080), s d Petygards (imp.) Bles Albert (4321).

R.—G. T. EATON, **Thurston Karel Daisy II** (76964), born 1st July; s Kirkhill Imp. Karel II (4051), d Colton Unique (14336), s d Colton Puritan (95).

V.H.C.—E. Furness, Hamels Park, Buntingford, Herts., **Hamels Florida** (71930), born 21st May; s Seaton Roland (P.I. 10593), d Corsebar Rose (24018), s d Moss (imp.) Adema 49th (4223).

H.C.—H. Hale, Kingswood, Tandridge, Oxted, Surrey, **Kingswood Beatty's Queen**, born 11th June; s Kingswood (imp. 1922) First Beatty (20571), d Kingswood Ceres Queen (34256), s d Hedges Second Series (6427 P.I.).

C.—F. & T. Neame, The Offices, Macknade, Faversham, Kent, **Macknade Premier's Froukje** (73840), born 3rd April; s Macknade (imp. 1922) Premier (20887), d Macknade (imp. 1922), Froukje (64170), s d Equestrian of Gloria (229 S.A.S.B.).

Class 98.—*British Friesian Heifer, calved in* 1924. [14 entries.]

I. (£10.)—G. Holt-Thomas, Northdean House, Hughendon, High Wycombe, Bucks., **Northdean Princess May 2nd**, born 22nd March; s Northdean (imp. 1922) Marthus Beatty (21081), d Northdean Princess May (55622), s d Dell Hollander (P.I. 7655).

II. (£5.)—G. T. Eaton, Thurston Hall, Framfield, Sussex, **Thurston Ynte Ellen**, born 30th January; s Kingswood (imp.) Ynte (4047), d Thurston Ellen (49368), s d Kirkhill (imp.) Karel II (4051).

III. (£2.)—E. Furness, Hamels Park, Buntingford, Herts., **Hamels Grace**, born 20th February; s Seaton Roland (P.I. 10593), d Dennistoun Amy 5th (32910), s d Corsebar Adema (6119).

R.—A. & J. Brown, Hedges Farm, St. Albans, **Hedges Alberts Countess**, born 24th January: s Petygards (imp.) Bles Albert (4321), d Wigginton Dutch Countess (27078), s d Wigginton (imp.) Johan (4637).

V.H.C.—H. Hale, Kingswood, Tandridge, Oxted, Surrey, **Kingswood Beatty's Gem**, born 28th January; s Kingswood (imp. 1922) First Beatty (20571), d Kingswood Ceres Gem (54100), s d Hedges Second Series (P.I. 6427).

Class 99.—*British Friesian Bull, calved in or before* 1922. [4 entries.]

I. (£10.)—F. & T. Neame, The Offices, Macknade, Faversham, Kent, **Hache Cerbert Viking** (17107), born 5th February, 1921, bred by Sir J. Ramsden, Bart., and Col. Thynne, Muntham Court, Findon, Worthing; s Hedges Second Series (6427), d Brooklands (imp.) Sietske 4th (17052), s d Bertus (5935 F.R.S.).

II. (£5.)—G. T. Eaton, Thurston Hall, Framfield, Sussex, **Thurston Karel President** (21581), born 1st January, 1922; s Kirkhill (imp.) Karel II (4051), d Foxhasetroch (17778), s d Wigginton Pippin (2235).

Class 100.—*British Friesian Bull, calved in* 1923. [7 entries.]

I. (£10.)—A. & J. Brown, Hedges Farm, St. Albans, **Hedges Prince Jan**, born 7th June; s Wigginton (imp.) Johan (4637), d Hedges Gracious Dutch (24962), s d Hedges (imp.) Fokke 2nd (3993).

II. (£5.)—P. H. Bingley, Ongar School, Essex, **Chipping Ongar Regalia**, born 24th June; s Terling (imp. 1922) Marthus (21533), d Terling Rotha VII (57388), s d Dunninald Haeayemairschaap (7699 P.I.).

II. (**£2.**)—T. D. Bishop, Water Farm, South Godstone, Surrey, **Mapleton Huntsman** (23643), born 4th July, bred by J. Russell, Mapleton, Edenbridge, Kent; s Mapleton (imp. 1922) Hilko (20907), d Mapleton Ethel (40594), s d Dunninald Haeayemairschaap (P.I.).

R.—V. G. Harmsworth, Valley Holme, Horsted Keynes, Sussex, **Thurston Karel Sunstar** (24437), born 4th February, bred by G. T. Eaton, Thurston Hall, Framfield, Sussex; s Kirkhill (imp.) Karel II (4051), d Foxlease Noel (17778), s d Wigginton Pippen (2235).

V.H.C.—E. Furness, Hamels Park, Buntingford, Herts., **Hamels Paulus Potter** (P.I. 22989), born 4th December; s Seaton Roland (P.I. 10593), d Hamels Froukjes Freule (P.I. 53230), s d Terling (imp.) Vic Bertus (4541).

Class 101.—*British Friesian Bull, calved in* 1924. [7 entries.]

I. (**£10.**)—G. Holt-Thomas, Northdean House, Hughendon, HighWycombe, **Northdean Meibloem's Beatty,** born 5th May; s Northdean (imp. 1922) Marthus Beatty (21081), d Northdean Meibloem (P.I. 47738), s d Dell Hollander (P.I. 7655).

II. (**£5.**)—E. Furness, Hamels Park, Buntingford, Herts., **Hamels Froukje's Ronald** (P.I.), born 17th February; s Seaton Ronald (P.I. 10593), d Hedges (imp.). Froukje 3rd (18050), s d Ceres (4497 F.R.S.).

III. (**£2.**)—G. T. Eaton, Thurston Hall, Framfield, Sussex, **Thurston Karel Khedive II,** born 10th March; s Kirkhill (imp.) Karel (4051), d Buckingham Berry III (23754), s d Bendrove Boss (2351).

R.—Capt. J. Christie, M.C., Glyndebourne, Ringmer, Lewes, **Glyndebourne Spectator,** born 5th July; s Glyndebourne (imp.) Rikus (20111), d Euston Pride (38766), s d Beccles Donovan (4777).

ABERDEEN-ANGUS.

(£20 towards the Prizes in the Aberdeen-Angus Classes were given by the English Aberdeen-Angus Cattle Association).

Class 102.—*Aberdeen-Angus Cow or Heifer, in-Milk, calved before 1st December,* 1922. [3 entries.]

I. (**£10.**)—C. T. Scott, Buckland Manor, Broadway, Worcestershire, **Elluma 2nd of Buckland** (72814), born 2nd December, 1921; s Etrurian of Bleaton (41498), d Elluma 3rd (42443), s d Euthalito (21896). (Last calf 9th December 1924).

II. (**£5.**)—Col. Sofer Whitburn, Amport, Andover, Hants., **Judy of Addington** (75456), born 8th December, 1921; s Eaton of Harviestoun (43247), d Junta of Byewell (53631), s d Elmstead of Byewell (35896). (Last calf 15th December, 1924).

III. (**£2.**)—E. A. Wigan, Conholt Park, Andover, Hants., **Ellenora of Conholt** (66089), born 23rd February, 1919; s Ether of Bleaton (39535), d Eldorado 3rd of Balthayock (45568), s d Ethiopian of Balthayock (25594). (Last calf 1st January, 1925).

Class 103.—*Aberdeen-Angus Heifer, calved on or after 1st December, 1922:* [4 entries.]

I. (£10.)—Major. J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., **Queen 4th of Basildon,** born 13th May, 1923 ; s Baron Eros of Bleaton (47225), d Queen Alexandra (55835), s d Gardafui of Ballindalloch (29056).

II. (£5.)—J. J. CRIDLAN, Maisemore Park, Gloucester, **Pride of Maisemore 25th** (73797), born 28th December, 1922 ; s George R. of Ballindalloch (30611), d Pride of Maisemore 21st (69157), s d Everjilt of Maisemore (45868).

III. (£2.)—Lt.-Col. M. BELL, Bourne Park, Canterbury, **Emerald of Bourne,** born 24th January, 1923 ; s John of Bourne (48489), d Evelyn 2nd of Bourne (66426), s d Provost of Bourne (40411).

R.—G. MALCOLM, Little Court, Crockham Hill, Edenbridge, Kent, **Blackbird of Crockham Hill** (74650), born 22nd March, 1923 ; s Evolator of Ballindalloch (50517), d Blackbird 18th of Braevail (70700), s d Prince D 2nd of Braevail (38509).

Class 104.—*Aberdeen-Angus Heifer, calved on or after 1st December, 1923.* [7 entries.]

I. (£10.)—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, Berks., **Beryl 2nd of Basildon,** born 6th March, 1924 ; s Prince Francis (51322), d Baitering Maid (68764), s d Watchman of Ballindalloch (37101).

II. (£5.)—C. T. SCOTT, Buckland Manor, Broadway, Worcestershire, **Evergreen 3rd of Buckland,** born 15th May, 1924 ; s Rufus of Buckland (53693), d Evergreen 56th, s d Idyll of Maisemore (36219).

III. (£2.)—E. A. WIGAN, Conholt Park, Andover, Hants., **Teresina of Conholt** (77746), born 10th December, 1923 ; s Behemah of Bleaton (51799), d Tuberose of Conholt (55475), s d Baron Breslan (30146).

R.—Col. SOFER WHITBURN, Amport, Andover, Hants., **Pride of Amport,** born 2nd December, 1923 ; s Euryalus of Ballindalloch (48123), d Pride of Mulben 42nd (54703), s d Eclipse of Ballindalloch (26733).

V.H.C.—G. MALCOLM, Little Court, Crockham Hill, Edenbridge, Kent, **Everon of Crockham Hill** (76882), born 6th January, 1924 ; s Elon of Tillyrie (52388), d Evergreen 5th of Braerail (70707), s d Prince of Parade (42304).

Class 105.—*Aberdeen-Angus Bull, calved before 1st December, 1923.* [2 entries.]

I. (£10.)—G. MALCOLM, Little Court, Crockham Hill, Edenbridge, Kent, **Enator of Crockham Hill** (54533), born 14th March, 1923 ; s Evolator of Ballindalloch (50517), d Ena 9th of Braevail (70702), s d Prince of Parade (42304).

Class 106.—*Aberdeen-Angus Bull, calved on or after 1st December, 1923.* [8 entries.]

I. (£10.)—Lt.-Col. M. BELL, Bourne Park, Canterbury, **Precept of Amport,** born 18th December, 1923, bred by Col. C. W. Sofer Whitburn, Amport, Andover, Hants. ; s Eurylas of Ballindalloch (48123), d Pride of Addington (73152), s d Echelant of Ballindalloch (31665).

II. (£5.)—C. T. SCOTT, Buckland Manor, Broadway, Worcestershire, **Black George 2nd of Buckland,** born 30th December, 1923 ; s Proud George (38595), d Lady Margaret of Claverdon (68420), s d Polled Piper (38450).

III. (£2.)—Col. SOFER WHITBURN, Amport, Andover, Hants., **Evermore of Amport,** born 14th December, 1923 ; s Euryalus of Ballindalloch (48123), d Evergreen 74th (69151), s d George R. of Ballindalloch (30611).

R.—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., **Jester 2nd of Basildon** (57286), born 8th March, 1924 ; s Prince Francis (51322), d Juicy of Apethorpe (61803), s d Pridoro (38485).

C.—J. J. CRIDLAN, Maisemore Park, Gloucester, **Proud Eric of Maisemore** (57939), born 12th February, 1924 ; s Eric 2nd of Maisemore (43525), d Pride of Maisemore 21st (69157), s d Everjilt of Maisemore (45868).

CHAMPION PRIZES.

GIVEN BY THE ABERDEEN-ANGUS CATTLE SOCIETY.

A Silver Medal for the Best Animal in Classes 102 *to* 106.

I.—C. T. SCOTT, Buckland Manor, Broadway, Worcestershire, **Elluma 2nd of Buckland** (72814), born 2nd December, 1921 ; s Etrurian of Bleaton (41498), d Elluma 3rd (42443), s d Euthalito (21896). (Last calf 9th December, 1924).

R.—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., **Queen 4th of Basildon,** born 13th May, 1923 ; s Baron Eros of Bleaton (47225), d Queen Alexandra (55835), s d Gardafui of Ballindalloch (29056).

GIVEN BY THE ENGLISH ABERDEEN-ANGUS CATTLE ASSOCIATION.

A Silver Medal for the best Animal of opposite Sex.

I.—Lt.-Col. M. BELL, Bourne Park, Canterbury, **Precept of Amport,** born 18th December, 1923, bred by Col. C. W. Sofer Whitburn, Amport, Andover, Hants. ; s Euryalus of Ballindalloch (48123), d Pride of Addington (73152), s d Echelant of Ballindalloch (31665).

R.—C. T. SCOTT, Buckland Manor, Broadway, Worcestershire, **Black George 2nd of Buckland,** born 30th December, 1923 ; s Proud George (38595), d Lady Margaret of Claverdon (68420), s d Polled Piper (38450).

GIVEN BY THE ARGENTINE ABERDEEN-ANGUS CATTLE ASSOCIATION.

A Silver Medal for the Best Animal in Classes 102 *to* 106, *bred by the Exhibitor.*

I.—C. T. SCOTT, Buckland Manor, Broadway, Worcestershire, **Elluma 2nd of Buckland** (72814), born 2nd December, 1921 ; s Etrurian of Bleaton (41498), d Elluma 3rd (42443), s d Euthalito (21896). (Last calf 9th December, 1924).

R.—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., **Queen 4th of Basildon,** born 13th May, 1923 : s Baron Eros of Bleaton (47225), d Queen Alexandra (55835), s d Gardafui of Ballindalloch (29056).

CHALLENGE CUP.

GIVEN BY THE ENGLISH ABERDEEN-ANGUS CATTLE ASSOCIATION.

The Venning Cup for the Exhibitor gaining the most points in the Aberdeen-Angus Classes on the basis of 4 points for a first prize, 3 points for a second, 2 points for a third, 1 point for a Reserve, 2 points for a Championship, and 1 point for a Reserve Championship. The Cup to be won twice in succession or three times in all before becoming the property of the Exhibitor.

PREVIOUS WINNER.

1924. J. J. Cridlan.

I.—C. T. SCOTT, Buckland Manor, Broadway, Worcestershire, **Elluma 2nd of Buckland** (72814), born 2nd December, 1921 ; s Etrurian of Bleaton (41498), d Elluma 3rd (42443), s d Euthalito (21896). (Last calf 9th December, 1924).

R.—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., **Queen 4th of Basildon,** born 13th May, 1923 ; s Baron Eros of Bleaton (47225), d Queen Alexandra (55835), s d Gardafui of Ballindalloch (29056).

RED POLL.

(£20 towards the Prizes in the Red Poll Classes were given by the Red Poll Cattle Society.)

CLASS 107.—*Red Poll Cow or Heifer, in-Milk, calved before* 1923 [8 entries.]

I. (£10.)—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks, **Sudbourne Comfit** (25965), born 10th August, 1916, bred by K. Clarke, Sudbourne Hall, Orford, Suffolk ; s Sudbourne Credit (10796), d Sudbourne Comfort (22355), s d Sudbourne Spicy (9751). (Last calf 27th March, 1925).

II. (£5.)—Viscount FOLKESTONE, Estate Office, Longford Castle, Salisbury, **Longford Ruby,** born 19th August, 1915, bred by The Earl of Radnor, Longford Castle, Salisbury ; s Longford King (10762), d Longford Diamond (22172), s d Demon (9789). (Last calf 25th April, 1925).

III. (£2.)—Lt.-Col. W. ELWES, Oakdale, Ockley Surrey, **Harefield Lupin,** born 10th August, 1918, bred by Leake & Long, Harefield, Middlesex ; s Harefield Cracker, d Combs Lavender, s d Sudbourne Spicenut.

R.—Major J. A. MORRISON, D.S.O., **Basildon Comfit** (29582), born 9th May, 1921 ; s Sudbourne Miner (11492), d Sudbourne Comfit (25965), s d Sudbourne Credit (10796). (Last calf 11th March, 1925).

CLASS 108.—*Red Poll Heifer, calved in* 1923.—[2 entries.]

I. (£10.)— Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks, **Basildon Wonder Pear** (32055), born 23rd January ; s Basildon Orpheus (11557), d Colworth Wistful (28618), s d Plumstead Periscope (11188).

II. (£5.)—Major J. A. MORRISON, D.S.O., **Basildon Carrie** (32043), born 15th August ; s Sudbourne Miner (11492), d Framlingham Chic (27679), s d Sudbourne Alliance (11218).

CLASS 109.—*Red Poll Heifer, calved in* 1924. [4 entries.]

I. (£10.)—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks, **Basildon Wonder Pear 2nd,** born 15th March ; s Basildon King (12519), d Cloworth Wistful (28618), s d Plumstead Periscope (11188).

II. (£5.)—Major J. A. MORRISON, D.S.O., **Basildon Brenda,** born 26th February ; s Necton Patriot (12387), d Boulge Brenda 8th (28524), s d Boulge Davyson 2nd (10953).

III. (£2.)—DYER & ROW, Grauntcourts, Rayne, Essex, **Grauntcourts Winnie** (Vol. 42), born 16th January ; s Sedgemere Paris (11458), d Kirton Rose (23078), s d Radiance (9721).

CLASS 110.—*Red Poll Bull, calved in or before* 1922—*First prize,* £10—*second,* £5—*third,* £2.

[NO ENTRY.]

CLASS 111—*Red Poll Bull, calved in* 1923. [1 entry.]

I. (£10.)—VISCOUNT FOLKESTONE, Estate Office, Longford Castle, Salisbury, **Longford Wistful,** born 12th February ; s Sudbourne Choice Goods (12455), d Longford Languish (29045), s d Longford Mixture (11407).

CLASS 112.—*Red Poll Bull, calved in* 1924. [2 entries.]

I. (£10.)—Capt. J. O. SHERRARD, Gaddesby Hall, Leicester, **Gaddesby Endurance,** born 20th January ; s Sudbourne Loyalist (11814), d Necton Elderflower (28060), s d Shrewsbury (10489).

R.—J. E. BADLEY, Chartness Farm, Hartfield, Sussex, **Chartness Mephistopheles,** born 5th May ; s Krupp Crown (11162), d Helmingham Mary 3rd (26929), s d Kenison Foundation (11017).

WELSH BLACK.

(£10 towards the Prizes in the Welsh Black Classes were given by the Welsh Black Cattle Society, and £15 by Sir Geo. Meyrick, and animals must have been registered or eligible for registration in the Welsh Black Cattle Herd Book.)

CLASS 113.—*Welsh Black Cow or Heifer, in-Milk, calved on or before November 30th,* 1922. [5 entries.]

I. (£10.)—S. H. JENKS, Pilsdon Manor, Bridport, **Pilsdon Mair** (2966), born 28th March, 1916, bred by W. T. Poytherch, Ponyngof, Angelsey ; s Welsh Emperor (608), d Murynig VII (1903). (Last calf 10th December, 1924).

II. (£5.)—S. H. JENKS, **Pilsdon Buk** (3174), born 1st January, 1915, bred by H. J. Lewis, Carrig Barcud, Angelsey ; s Stanley (954), d Miss Arton (1252).

III. (£2.)—Sir G. A. E. T. G. MEYRICK, Bart., Hinton Admiral, Christchurch, Hants., and Bodorgan, Isle of Anglesey, **Bodelwa Shan III,** born 14th December, 1919, bred by O. E. Hughes, Bodelwa, Tycroes, Isle of Anglesey ; s Bodelwa Volunteer (1273), d Bodelwa Shan II (2106), s d Bodelwa Botha (1267). (Last calf 4th December, 1924).

R.—Sir G. A. E. T. G. Meyrick, Bart., **Mair II** (1831), born 10th September, 1912, bred by Lord Penrhyn, Penrhyn Castle, North Wales; s Duke of Wellington (294), d Mair (388). (Last calf 24th October, 1924).

Class 114.—*Welsh Black Heifer, calved on or between December* 1*st,* 1922, *and November* 30*th,* 1923. [2 entries.]

I. (£10.)—Sir G. A. E. T. G. Meyrick, Bart., Hinton Admiral, Christchurch, Hants., and Bodorgan, Isle of Anglesey, **Bodorgan Blodwen,** born 17th January 1923; s Pennynydd Caswallon (2062), d Bodelwa Shan III (4158), s d Bodelwa Volunteer (1273).

II. (£5.)—Sir G. A. E. T. G. Meyrick, Bart., **Bodorgan Nesta,** born 2nd August, 1923; s Aberalaw Caradog (1553), d G.M. (46), s d Bodelwa George (466).

Class 115.—*Welsh Black Heifer, calved on or between December* 1*st,* 1923, *and November* 30*th,* 1924. [6 entries.]

I. (£10.)—Sir G. A. E. T. G. Meyrick, Bart., Hinton Admiral, Christchurch, Hants., and Bodorgan, Isle of Anglesey, **Bodorgan Sally,** born 1st January, 1924; s Bodelwa Ap. Volunteer (2175), d Bodelwa Sally II (5025), s d Bodelwa Volunteer (1273).

II. (£5.)—S. H. Jenks, Pilsdon Manor, Bridport, Dorset, **Tregarn Dlos** (Ear No. 17, Vol. xiii), born 13th January, 1924, bred by E. Owen, Foamairchion St. Asaph; s Forestry of Penship (2372), d Flews Tregarn XII (3553).

III. (£2.)—S. H. Jenks, **Pilsdon Bernice** (Ear No. 95, Vol. xiii), born 22nd December, 1923; s Nanhoron President (6024), d Dola (2393).

R.—S. H. Jenks, **Pilsdon Bee** (Ear No. 97, Vol. xiii), born 25th February, 1924; s Ernys of Penship (849), d Victoria of Penship (2919).

H.C.—Sir G. A. E. T. G. Meyrick, Bart., **Bodorgan Buddug,** born 1st May, 1924; s Bodelwa Colonel (2176), d Bodorgan Snowdrop, s d Bodelwa George (466).

C.—Little Green Estates Co., Hucksholt Farm, Harting, Petersfield, **Little Green Bessie Ddu** (Vol. 13), born 8th May, 1924; s Little Green Jock (2537), d Bessie Ddu (3271), s d Jacko (975).

Class 116.—*Welsh Black Bull, calved in* 1922, 1923, *or* 1924. [4 entries.]

I. (£10.)—Little Green Estates Co., Hucksholt Farm, Harting, Petersfield, **Voelas Visitor,** born 9th November, 1922, bred by Voelas Estates, Rhydycrena, Bettws-y-Coed, N. Wales; s Plasbryn Champion (1744), d Rhydygarnedd Olwen (1452).

II. (£5.)—Sir G. A. E. T. G. Meyrick, Bart., Hinton Admiral, Christchurch, Hants., and Bodorgan, Isle of Anglesey, **Ystwyth Predominant,** born 18th February, 1923, bred by the late Col. A. J. Pugh, O.B.E., V.D., Lovesgrove Farm, Aberystwyth; s Bodelwa Volunteer (1273), d Lady Newydd VII (3153), s d Glyn Togo (934).

III. (£2.)—S. H. Jenks, Pilsdon Manor, Bridport, **Pilsdon Brigadier** (Ear. No. 70, Vol. xii), born 3rd March, 1923; s Madryn Leo (1404), d Bachellyn Omaha (2306).

AYRSHIRE.

(£15 towards the Prizes in the Ayrshire Classes were given by the English Committee of the Ayrshire Cattle Herd Book Society and animals entered must have been registered or eligible for registration in the Society's Herd Book.)

CLASS 117.—*Ayrshire Cow, in-Milk, calved in or before* 1921 [4 entries.]

I. (£10.)—THE EARL OF EGLINTON AND WINTON, Horns Lodge, Tonbridge, Kent, **Eglinton Mains Dainty** (58016), born 28th January, 1918 ; s Eglinton Mains Look Alive (14319), d Eglinton Mains Scotch Lady (38659), s d Whitehill Royal Scott (10401).

II. (£5.)—THE EARL OF EGLINTON AND WINTON, **Eglinton Mains Nora** (58033), born 5th April, 1918 ; s Eglinton Mains Look Alive (14319), d Eglinton Mains Nettie (34156), s d Airchencloigh Look Again (8815).

III. (£2.)—Lt.-Col. R. E. CECIL, D.S.O., Passford House, Lymington, Hants., **Eglinton Mains Blossom** (68323), born 2nd October, 1919, bred by The Earl of Eglinton and Winton, Horns Lodge, Tonbridge, Kent ; s Eglinton Mains Look Alive (14319), d Eglinton Mains Red Rose (58035), s d Howies Regal Record (14090). (Last calf 24th February, 1925).

R.—Lt.-Col. R. E. CECIL, D.S.O., **Low Milton Queen Mab** (68533), born 31st March, 1920, bred by T. Logan, Low Milton, Maybole ; s Bargenoch Casabianca (15250), d Low Milton Maggie (39748), s d Low Milton Good Hope (10057).

CLASS 118.—*Ayrshire Heifer, in-Milk, calved after January 1st*, 1922. [2 entries.]

I. (£10.)—THE EARL OF EGLINTON AND WINTON, Horns Lodge, Tonbridge, Kent, **Eglinton White Sister** (87850), born 9th March, 1922 ; s Bargenoch Casabianca (15250), d Eglinton Mains Cissie (58015), s d Lochlands Drumsuie (15454). (Last calf 17th January, 1925).

II. (£5.)—Lt.-Col. R. E. CECIL, D.S.O., Passford House, Lymington, Hants., **Passford Crocus** (86831), born 14th April, 1922, bred by D. Wallace, Auchenbrain, Mauchline, N.B ; s South Craig Footprint (19958), d Auchenbrain Lady Thora 6th (54214), s d Lessnessock Golden Love (11003). (Last calf 25th March, 1925).

CLASS 119.—*Ayrshire Heifer, calved after September 1st*, 1923. [7 entries.]

I. (£10.)—R. SILLARS & SON, Ickham Court, Canterbury, **Ickham Mermaid,** born 30th April, 1924 ; s Westburn Cupbearer (32197), d Netherton Mermaid (57023), s d Netherton Dayspring (13814).

II. (£5.)—THE EARL OF EGLINTON AND WINTON, Horns Lodge, Tonbridge, Kent, **Eglinton Graceful** (95435), born 9th October, 1923 ; s Eglinton Mains Snow King (19734), d Eglinton Mains Sprightly (58037), s d Eglinton Mains Look Alive (14319).

III. (£2.)—R. SILLARS & SON, **Ickham Willie II,** born 18th February, 1924 ; s Westburn Cupbearer (22197), d Netherton Naida II (61164), s d Netherton Dayspring (13814).

R.—O. D. MAXTED, Upper Jarrington, Littlebourne, Canterbury, Kent, **Jarrington Annice 2nd,** born 14th October, 1923 ; s Mansfield Mains Magnet (23094), d Mansfield Mains Annice (80156), s d Howies Wire Nu (17272).

JERSEY.

(The Prizes in Class 120 were offered by the English Jersey Cattle Society.)

CLASS 120.—*Cow or Heifer, in-Milk, entered in or eligible for entry in the English Jersey Herd Book, sired in Great Britain or Ireland.* [12 entries.]

I. (£5.)—R. BRUCE WARD, Godinton, Ashford, Kent, whole **Miranda's Lass,** born 5th November, 1919; s Marionette's Lad (13351), d Fairlawne Miranda (Vol. 31, p.274), s d Sir Toby (12154). (Last calf 10th March, 1925).

II. (£3.)—Mrs. EVELYN, Wotton House, Dorking, nearly whole, **Wotton Queen of Clubs,** born 24th March, 1921; s Acer's Prince (13466), d Wotton Margaret xxviii (364), s d Yeovil Lad (10833).

III. (£2.)—G. CROSS, Smart's Hill, Penshurst, Kent, whole, **Hamletta's Queen,** born 10th March, 1918, bred by A. W. Ruggles, Spains Hall, Braintree; s Allora's Prince, d Hamletta III, s d Midsummer. (Last calf 12th March, 1925).

R. and V.H.C.—G. BERRY, Mount Bures, Bures, Suffolk, whole, **Postmistress,** born 23rd January, 1922; s Lord Blackberry, d Postage 2nd, s d Verdion. (Last calf 19th January, 1925).

V.H.C.—E. A. STRAUSS, Kingston House, Abingdon, Berks., **Sultan's Remembrance 6th,** born 16th March, 1914, bred by E. Mathews, C.V.O., Little Shardeloes, Bucks.; s Noble Sultan of Oaklands (110), d Remembrance 9th, s d Carnation Crown (6493). (Last calf 15th March, 1925).—Brig.-Gen. J. T. WIGAN, C.B., C.M.G., D.S.O., Danbury Park, Chelmsford, whole, **Danbury Tinkabelle,** born 16th May, 1921; s Danbury Red King (13535), d Topaz 2nd, s d Cowslips Pioneer (13226).

H.C.—Mrs. EVELYN, **Wotton Relustria,** born 11th July, 1917; s Illustrious (10289), d Record III, s d Astor. (Last calf 14th January, 1925).

CLASS 121.—*Jersey Cow, in-Milk, calved before* 1922. [13 entries.]

I. (£10.) Mrs. H. BRIGGS, The Grange, North Stoke, Oxon., whole, **Petune's Victory,** born 26th August, 1918, bred by R. Hervie, St. Lawrence, Jersey; s Petune's Lad (5458 P.S.), d Running Water (23949 P.S.), s d Anemone's Ledas Lad (5204 P.S.H.C.).

II. (£5.)—R. BRUCE WARD, Godinton, Ashford, Kent, whole, **Miranda's Lass,** born 5th November, 1919; s Marionette's Lad (13351), d Fairlawne Miranda (Vol. 31, p.274), s d Sir Toby (12154). (Last calf 10th March, 1925).

III. (£2.)—Mrs. EVELYN, Wotton House, Dorking, nearly whole, **Wotton Queen of Clubs,** born 24th March, 1921; s Acer's Prince (13466), d Wotton Margaret xxviii (364), s d Yeovil Lad (10833).

R. and V.H.C.—G. CROSS, Smart's Hill, Penshurst, Kent, whole, **Hamletta's Queen,** born 10th March, 1918, bred by A. W. Ruggles, Spains Hall, Braintree; s Allora's Prince, d Hameltta III, s d Midsummer. (Last calf 12th March, 1925).

V.H.C.—J. B. LLOYD, jun., Foxbury Stone Street, N. Sevenoaks, Kent, fawn, broken, **Dinard 6th,** born 7th October, 1920, bred by J. M. Davy, St. Helier, Jersey: s Masterman of Oaklands, d Dinard, s d Noble's Jolly Sultan. Last calf 1st April, 1925).

H.C.—G. CROSS, Smart's Hill, Penshurst, Kent, whole, **Eastern Queen Laxton,** born 15th February, 1917, bred by J. A. Gibaut, Trinity, Jersey; s Dame's Gamboge, d Western Queen Laxton, s d Western King.—Mrs. C. S. OLIVER, Whitmore Lodge, Sunninghill, Berks., **Dorothy,** born 8th January, 1920, bred by Mr. Corrie, Lomfield Heath, Crawley. (Last calf 18th January, 1925).

CLASS 122.—*Jersey Cow or Heifer, in-Milk, calved in* 1922. [8 entries.]

I. (£10.)—Mrs. EVELYN, Wotton House, Dorking, whole, **Wotton Air Sprite,** born 27th April; s Wotton Airman, d Wotton Gay Sprite, s d Fairy Fontaine Boy (5493).

II. (£5.)—G. BERRY, Mount Bures, Bures, Suffolk, whole, **Postmistress,** born 23rd January, 1922; s Lord Blackberry, d Postage 2nd, s d Verdion. (Last calf 19th January, 1925).

III. (£2.)—Mrs. H. BRIGGS, The Grange, North Stoke, Oxon., broken, **Volunteer's Remembrance 3rd,** born 24th July, bred by E. Matthews, Little Shardeloes, Amersham, Bucks.; s Volunteer's Majesty (14159), d Council's Remembrance, s d Council (12886). (Last calf 29th January, 1925).

R. and V.H.C.—R. BRUCE WARD, Godinton, Ashford, Kent, whole, **Pallida Iris,** born 21st May; s Paladin (14406), d Princess Ida, s d Prometheus (13391). (Last calf 15th April, 1925).

H.C.—H. C. PELLY, Kentwine, Nutfield, Surrey, broken, **Kentwins Griselda,** born 13th May; s Danbury Red King (13535), d Peggy's Fairest xxxii (421), s d Fern's Oxford Noble 2nd (5297).—Brig.-Gen. J. T. WIGAN, C.B., C.M.G. D.S.O., Danbury Park, Chelmsford, broken, **Loveling,** born 5th March, bred by J. S. Toudjel (imported); s Oaklands Sultan (13681), d Duchess Cyril (25331), s d Ognes Golden Lad.

CLASS 123.—*Jersey Heifer, in-Milk, calved in or since* 1923. [7 entries.]

I. (£10.)—Mrs. EVELYN, Wotton House, Dorking, nearly whole, **Wotton Moonolia,** born 28th January, 1923; s Henbury Moonlight, d Wotton Vinolia, s d Illustrious.

II. (£5.)—G. CROSS, Smart's Hill, Penshurst, Kent, whole, **Doreen,** born 4th March, 1923, bred by A. W. Ruggle, Brise, Spains Hall, Braintree; s Park Keeper, d Lady Daphne.

III. (£2.)—H. C. PELLY, Kentwins, Nutfield, Surrey, whole, **Primrose 2nd,** born 9th May, 1923, bred by the late Mrs. McIntosh, Havering Park, Romford, Essex; s Prince Masterman (14088), d Primrose xxxv (424), s d Belfry Royal (12541).

R. and H.C.—J. B. LLOYD, jun., Foxbury, Stone Street, N. Sevenoaks, Kent, grey brown, **Homestead Triumph,** born 11th April, 1923, bred by Frs. Le Broeg, St. Peter, Jersey; s Xenia's Sultan 2nd, d Ulrica's Love, s d Xenia's Oxford King.

H.C.—R. BRUCE WARD, Godinton, Ashford, Kent, whole, **Mantilla,** born 10th May, 1923; s Martinet (14695), d Mistress Lace (Vol. 34, p.387), s d Masterman of Oaklands (13020).

CLASS 124.—*Jersey Bull, calved before* 1923. [4 entries.]

I. (£10.)—R. BRUCE WARD, Godinton, Ashford, Kent, broken, **Canterbury Pilgrim** (14561), born 9th April, 1921 ; s Pilgrim (13699), d Caper, s d Capsicum (10892).

CLASS 125.—*Jersey Bull, calved in* 1923. [3 entries.]

I. (£10.)—R. BRUCE WARD, Godinton, Ashford, Kent, broken, **Sir Laurel**. born 11th May ; s Saint Louis (14778), d Evergreen (Vol. 31, p.273), s d Catillon's Prince (11639).

II. (£5.)—G. CROSS, Smart's Hill, Penshurst, Kent, whole, **Gloxalia's Penshurst Pilgrim,** born 18th May ; s Canterbury Pilgrim, d Gloxalia II, s d King Capsicum.

III. (£2.)—Capt. the Hon. M. KNATCHBULL, M.C., Mersham-le-Hatch, Ashford, Kent, whole, **Chancellor,** born 6th April ; s Midas (14383), d Mersham Hatch Cigarette (Vol. xxxiii. p.382), s d Lord Colchicum (14011).

CLASS 126.—*Jersey Bull, calved in* 1924. [10 entries.]

I. (£10.)—G. CROSS, Smart's Hill, Penshurst, Kent, whole, **Penshurst Coeur de Lion,** born 19th April ; s Penshurst Yellow Prince, d Gloxalia II, s d King Capsicum.

II. (£5.)—Mrs. EVELYN, Wotton House, Dorking, broken, **Wotton Ace of Trefles,** born 25th April ; s Wotton Airman II, d Wotton Queen of Clubs, s d Acer's Prince.

III. (£2.)—R. BRUCE WARD, Godinton, Ashford, Kent, whole, **Sir Lovat,** born 13th March ; s Saint Louis (14778), d Privett (Vol. 32, p.146), s d Prometheus (13391).

R.—Mrs. H. BRIGGS, The Grange, North Stoke, Oxon., whole, **North Stoke's Glory,** born 31st March ; s Canterbury Pilgrim (14561), d Petune's Victory (Vol. 35, p.419), s d Petune's Lad (5458 P.S.).

H.C.—H. S. MOUNTAIN, Groombridge Place, Kent, whole, **Jacobus,** born 22nd April, bred by J. du Val, St. Peters ; s Usurper (5922), d Kitty's Belle Blonde (26746 P.S.H.C.), s d Blone's Golden Oxford.—Brig.-Gen. J. T. WIGAN, C.B., C.M.G., D.S.O., Danbury Park, Chelmsford, whole, **Danbury Majorca,** born 29th June ; s Wotton Vervains Moonlight (14505), d Metylene, s d Topsys Noble.

SPECIAL PRIZE.

GIVEN BY MRS. OSWALD AMES.

For animals of any age of either sex entered in Classes 120 *to* 126, *the property of a member of the South-Eastern Jersey Club, who had not won a* 1*st,* 2*nd or* 3*rd Prize at any Show lasting more than* 1 *day in* 1923, 1924 *or* 1925.

I. (£3.)—H. C. PELLY, Kentwins, Nutfield, Surrey, whole, **Primrose 2nd,** born 9th May, 1923, bred by the late Mrs. McIntosh, Havering Park, Romford, Essex ; s Prince Masterman (14088), d Primrose xxxv (424), s d Belfry Royal 12541).

II. (**£2.**)—J. B. LLOYD, jun., Foxbury Stone Street, N. Sevenoaks, Kent, fawn, broken, **Dinard 6th,** born 7th October, 1920, bred by J. M. Davy, St. Helier, Jersey ; s Masterman of Oaklands, d. Dinard, s d Noble's Jolly Sultan. (Last calf 1st April, 1925).

R.—H. S. MOUNTAIN, Groombridge Place, Kent, whole, **Jacobus,** born 22nd April, bred by J. du Val, St. Peters ; s Usurper (5922), d Kitty's Belle Blonde (26746 P.S.H.C.), s d Blone's Golden Oxford.—J. B. LLOYD, junr., grey brown, **Homestead Triumph,** born 11th April, 1923, bred by Frs. Le Broeg, St. Peter, Jersey ; s Xenia's Sultan 2nd, d Ulrica's Love s d Xenia's Oxford King.

GUERNSEY.

(£20 towards the Prizes in the Guernsey classes were given by the English Guernsey Cattle Society.)

CLASS 127.—*Guernsey Cow, in-Milk, calved before* 1922. [13 entries.]

I. (**£10.**)—Messrs. C. NORMAN, Moor Place, Much Hadham, Herts., fawn and white, **Hadham Marigold IV** (16540), born 17th March, 1921 ; s Ladock Prince Albert (3550 A.R.10), d Hadham Marigold (12099), s d Hadham Goldseeker (2766 A.R.2).

II. (**£5.**)—The Misses HARGREAVES, Nazeing, Essex, fawn and white, **Nazeing Marigold** (18118), born 16th April, 1921, bred by the late W. Lawrence, Belcher's Farm, Nazeing, Essex ; s Durrington Rose King des Houards (3685), d Kingsmoor Golden Maid 4th (10137), s d Kingsmoor Count (2320).

III. (**£2.**)—R. G. CAMPBELL, Pickhurst Manor, Hayes, Kent, fawn and white, **Bealings Rose 5th** (16092), born 23rd August, 1921, bred by A. E. Howe, Grove Farm, Bealings, Suffolk ; s Raymond of Carteret 2nd (3783), d Bealings Rose 2nd (14059), s d The Earl 2nd of Mouilpied (3413). (Last calf 14th March, 1925).

R.—Mrs. HOWARD PALMER, Heathland's, Wokingham, Berks., fawn and white, **Mildred 2nd of Bel Air** (14601), born 12th February, 1918, bred by Hon. C. R. Molesworth, Hotel Bel Air, Sark ; s My Delight of Park Farm (3753 P.S.), d Mildren of Bel Air (13752), s d Sylph's Majestic (3042 P.S.).

V.H.C.—W. A. ARGENT, Ghyll Manor, Rusper, Sussex, fawn and white, **Ranunculus of Goodnestone 8th** (14712 E.G.H.B.), born 3rd July, 1919, bred by Lord Fitzwalter, Goodnestone Park ; s Sequels Delight 2nd, d Ranunculus of Goodnestone, s d Governor of the Barras.

H.C.—A. C. BEATTY, Calehill Park, Little Chart, Kent, fawn and white, **Golden Queen of Goodnestone** (12085), born 31st August, 1916, bred by Lord Fitzwalter, Goodnestone Park, Canterbury : s Golden Casket 3rd (2586), d Donnington June (8041), s d Lord Howe of Warren Wood (1962). (Last calf 10th April, 1925).—J. B. BODY, Hindhead Court, Hindhead, Surrey, fawn and white, **Polly of the Isles of Goodnestone 3rd** (14671), born 25th February, 1919, bred by H. F. Plumptre, Goodnestone Park, Canterbury ; s Rose Lad of Goodnestone (3163), d Polly of the Isles 10th (8206), s d Golden Noble (1930).

CLASS 128.—*Guernsey Heifer, in-Milk, calved in* 1922. [7 entries.]

I. (**£10.**)—LORD FITZWALTER, Goodnestone Park, Canterbury, red and white, **Wintergreen of Goodnestone 10th,** born 28th May ; s Rose Lad of Goodnestone (3163), d Wintergreen of Goodnestone 2nd (14018), s d Sequel's Delight 2nd (3403). (Last calf 13th January, 1925).

II. (**£5.**)—E. G. MacAndrew, Pallinghurst, Baynards, Horsham, fawn and white, **Grasmere Apple Blossom** (17784), born 26th August, bred by -- Parsons, Grasmere Farm, Hurstpierpoint; s Valentine's Honour's Heir (4368), d Holly Apple Blossom (14454).

III. (**£2.**)—Mrs. Howard Palmer, Heathlands, Wokingham, Berks., fawn and white, **Murrell Ladyship** (18106), born 11th November; s Murrell Desmond (4263), d Murrell Golden Lady (12268), s d Lynchmere Lord Roberts (2794).

R.—Mrs. F. H. T. Jervoise, Herriard Park, Basingstoke, fawn and white, **Cloth of Frie Baton** (19924), born 19th September, bred by F. Brown, Norgiots, St. Andrews, Guernsey; s Cyrene's Lad of the Rouvets (4252 P.S.), d Cloth of Gold vii (10951 P.S.). (Last calf 17th March, 1925).

C.—C. I. Blackburne, Valence, Westerham, Kent, fawn and white, **Valence Verbena** (18507), born 12th September; s Valence Geoffrey (4362), d Leybourne Winifred (12915), s d Queen's Delight (3017).

Class 129.—*Guernsey Heifer, calved in* 1923. [5 entries.]

I. (**£10.**)—The Viscount Lascelles, K.G., Goldsborough, Knaresborough, Yorks., fawn and white, **Goldsborough Lady I**, born 23rd January; s Claremont Eros (3870), d Trequean Lady II (11770), s d Sequel's Galore II (2849).

II. (**£5.**)—J. B. Body, Hindhead Court, Hindhead, Surrey, fawn and white, **Hindhead Polly 3rd** (18719), born 25th April; s Governor 4th de Ruetts (3718), d Polly of the Isles of Goodnestone (14671), s d Rose Lad of Goodnestone (3163).

III. (**£2.**)—Messrs. C. Norman, Moor Place, Much Hadham, Herts., fawn and white, **Hadham Marigold XI** (19157), born 4th June; s Downe Star of Honeymoon (3909), d Hadham Marigold IV (16540), s d Ladock Prince Albert (3550 A.R.10).

R.—A. C. Beatty, Calehill Park, Little Chart, Kent, fawn and white, **Calehill Lizzie** (18657), born 11th April; s Murrell Golden Cheer (3993), d Lizette of St. Catherine (13718), s d Lively Sailor Boy of Les Quartiers (3622 P.S.).

Class 130.—*Guernsey Heifer, calved in* 1924. [20 entries.]

I. (**£10.**)—J. B. Body, Hindhead Court, Hindhead, Surrey, fawn and white, **Hindhead Polly 4th** (20365), born 19th April; s Lynchmere Lord Roberts 15th (3982), d Polly of the Isles of Goodnestone 3rd (14671), s d Box Lad of Goodnestone (3163).

II. (**£5.**)—J. B. Body, fawn and white, **Hindhead Poppy** (20420), born 12th May; s Lynchmere Lord Roberts 15th (3982), d Hindhead Polly (16602), s d Slogan de Bon Espoir (4317).

III. (**£2.**)—W. A. Argent, Ghyll Manor, Rusper, Sussex, fawn and white, **Ghyll Ranunculus** (20132 E.G.H.B.), born 27th February; s Sequel's Slogan 2nd, d Ranunculus of Goodnestone 8th, s d Sequel's Delight 2nd.

R.—Lord Fitzwalter, Goodnestone Park, Canterbury, fawn and white, **Rose of Goodnestone 9th** (20537), born 17th May; s Sequel's Slogan 2nd (4311), d Rose of Goodnestone 7th (16945), s d Rose Lad of Goodnestone (3163).

V.H.C.—C. I. BLACKBURNE, Valence, Westerham, Kent, fawn and white, **Valence Cecily** (20761), born 16th June ; s Hindhead Robert (4845), d Valence Barbara (15960), s d Leybourne Cecil (3551).—F. REED, Hamer Farm, West Wickham, Kent, fawn and white, **Golden Rose** (25039 P.S., R.G.A.S.), born 24th May, bred by J. L. Goasdoué, Lorier, St. Saviour's, Guernsey : s Admiral Beatty (4690 P.S., R.G.A.S.), d Rose of Longue Rue (5429 R.G.A.S.).

CLASS 131.—*Guernsey Bull, calved in* 1921 *or* 1922. [3 entries.]

I. (£10.)—J. B. BODY, Hindhead Court, Hindhead, Surrey, fawn and white, **Hindhead Governor** (4842), born 24th October, 1922 ; s Governor 4th des Rueths (3718), d Rosy of Goodnestone (12343), s d Gunner 3rd (2459).

II. (£5.)—THE CONQUEST CAKE MILLS, Hastings, fawn and white, **Lynchmere Lord Roberts XVII** (4537), born 11th August, 1921, bred by Mrs. Pratt Barlow, Lynchmere, Surrey ; s Roberts Boy's Sequel (2496), d Lynchmere Violet 2nd (12217), s d Polly's Ideal of Maison de Bas (3198).

III. (£2.)—THE COUNTESS OF ONSLOW, Clandon Park, Guildford, fawn and white, **Claremont Orion** (4430), born 21st February, 1921, bred by the late H.R.H. The Duchess of Albany, Esher ; s Amiable Gemmy (3848), d Glow of the Preel (12774), s d Raymond of the Baisieres (2936 P.S.).

CLASS 132.—*Guernsey Bull, calved in* 1923. [11 entries.]

I. (£10.)—W. A. ARGENT, Ghyll Manor, Rusper, Sussex, fawn and white, **Lynchmere Lord Roberts 20th** (5335, E.G.H.B.), born 31st August, bred by Mrs. Pratt Barlow, Lynchmere, Surrey ; s Roberts Boy's Sequel, d Tregye Coral, s d Ladock Prince Charming.

II. (£5.)—LORD FITZWALTER, Goodnestone Park, Canterbury, fawn and white, **Rose Lad of Goodnestone 7th** (5232), born 30th August ; s Rose Lad of Goodnestone (3163), d Lady Muriel 2nd (12899), s d Governor of the Barras (2966).

III. (£2.)—THE VISCOUNT LASCELLES, K.G., Goldsborough, Knaresborough, Yorks., fawn and white, **Goldsborough Golden Prince,** born 29th June ; s Brittleware Princeling (3282), d Bosistow Marigold (11154), s d Godolphin Sambo (2450).

R.—G. C. THORWALD LOWE, Oaklands, Smarden, Kent, fawn and white, **Ely Pilgrim** (5149), born 11th May, bred by J. Q. Rowett, LL.D., Ely Place, Frant ; s Murrell Recruit, d Elfordleigh Sapphire, s d Hammill of Marazion (3334).

V.H.C.—W. A. ARGENT, fawn and white, **Honour of the Clohire** (5334 E.G.H.B.), born 19th January, bred by N. Ogier, Floture Cottage, Castel, Guernsey ; s Nellies Ideal, d Primrose of the Clohire, s d Governor of Lilyrate.

CLASS 133.—*Guernsey Bull, calved in* 1924. [10 entries.]

I. (£10.)—J. B. BODY, Hindhead Court, Hindhead, Surrey, fawn and white, **Hindhead Robert 3rd** (5465), born 8th May ; s Lynchmere Lord Roberts 15th (3982), d Morland Lady Richmond (16788), s d Slogan Climax (4035).

II. (£5.)—MRS. F. H. T. JERVOISE, Herriard Park, Basingstoke, fawn and white, **Herriard Honour Bright** (5661), born 15th August ; s Herriard Valentine Honour (4837), d Herriard Sweet 3rd (17868), s d Herriard Fanny's Ossee (4224).

III. (**£2.**)—Mrs. HOWARD PALMER, Heathland's, Wokingham, Berks., fawn and white, **Downe Rose Lad 3rd,** born 10th June, bred by D. C. Haldeman, Hayes Street Farm, Hayes, Kent; s Rose Lad of Goodnestone (3163), d Downe Pearl (14283), s d Gay Boy 6th of Myrtle Place (3518 P.S.).

R.—A. C. BEATTY, Calehill Park, Little Chart, Kent, fawn and white, **Calehill Ivor** (5439), born 14th April; s Sequel's Slogan (4933), d Froome's Isabel (18671), s d Lord Kitchener of Rose Farm (212 P.S.).

V.H.C.—Col. F. S. W. CORNWALLIS, Linton Park, Linton, Maidstone, fawn and white, **Downe Valentine's Honour of Vimiera 8th,** born 21st May, bred by D. C. Haldeman, Hayes Street Farm, Hayes, Kent; s Downe Valentine's Honour of Vimiera 2nd, d Downe Almond 2nd, s d Warbler's Dream (3249 A.R.).

SPECIAL PRIZE.

GIVEN BY G. H. JOHNSTONE, ESQ., THROUGH THE ENGLISH GUERNSEY CATTLE SOCIETY.

"*The Trewithen Challenge Cup*" *for the Best Bull exhibited in the Guernsey Classes, whose dam and sire's dam had qualified in accordance with the standard required for entry in the Advanced Register of the English Guernsey Cattle Society, both in milk and butter fat, or alternately in either milk or butter fat with* 30 *per cent. above the requirements for entry. Only the official test of the English Guernsey Cattle Society, Royal Guernsey Agricultural Society, or the Ministry of Agriculture was accepted. The Cup to be won three years in succession by the same exhibitor before becoming his absolute property.*

I.—J. B. BODY, Hindhead Court, Hindhead, Surrey, fawn and white, **Hindhead Governor** (4842), born 24th October, 1922; s Governor 4th des Rueths (3718), d Rosy of Goodnestone (12343), s d Gunner 3rd (2459).

R.—J. B. BODY, fawn and white, **Hindhead Robert 3rd** (5465), born 8th May; s Lynchmere Lord Roberts 15th (3982), d Morland Lady Richmond (16788), s d Slogan Climax (4035).

KERRY.

(£15 of the Prizes in classes 134 to 136 were given by the British Kerry Cattle Society.)

CLASS 134.—*Kerry Cow or Heifer, in-Milk, calved in or before* 1922. [6 entries.]

I. (**£10.**)—KERRY ESTATES, LTD., The Warren House, Stanmore, Middlesex, **Valencia Eileen III,** born 14th March, 1916, bred by the Knight of Kerry, Valencia Island, Co. Kerry, Ireland; s Valencia Lord 1st (782), d Valencia Eileen II (3778), s d Gort Prince (636).

II. (**£5.**)—Capt. N. ZAMBRA, M.C., and C. W. MILNE, West Tisted Manor, Ropley, Hants., **Castlelough Cowslip 4th** (2238), born 3rd March, 1917, bred by J. Hilliard, Killarney; s Castlelough Dermott (377), d Castlelough Cowslip 3rd (2023), s d Castlelough Rover (746). (Last calf 16th March, 1925).

III. (**£2.**)—KERRY ESTATES, LTD., **Ruby of Carton,** born 13th May, 1918, bred by The Duke of Leinster, Carton, Maynooth, Co. Kildare ; s Prince 12th of Carton (802), d Daffodil 11th of Carton, s d Prince 6th of Carton (771). (Last calf 15th March, 1925).

R.—L. CURRIE, Minley Manor, Farnborough, Hants., **Minley Miranda,** born 10th December, 1921 ; s Watersheen Ratmore (454), d Minley Mirabel (2715), d Valentia Lord 3rd (370).

H.C.—B. W. A. WATNEY, Chaldon Mead, Caterham, **Hattingley Hussey** (2690). Foundation Stock. Herd Book, Vol. xxii (No. 2690).

CLASS 135.—*Kerry Heifer, not in-Milk, calved in* 1923 *or* 1924. [13 entries.]

I. (**£10.**)—L. CURRIE, Minley Manor, Farnborough, Hants., **Minley Dorothy,** born 23rd March, 1923 ; s Sloe Drop (415), d Minley Midget (2445), s d Valentia Lord 3rd (370).

II. (**£5.**)—Capt. N. ZAMBRA, M.C., and C. W. MILNE, West Tisted Manor, Ropley, Hants., **Hattingley Belle,** born 6th May, 1923 ; s Valencia Samson (535), d Hattingley High Kick (2402).

III. (**£2.**)—Capt. N. ZAMBRA, M.C., and C. W. MILNE, **Hattingley Bertha,** born 17th May, 1923 ; s Valencia Samson (535), d Hattingley Herb 2nd (2655).

R.—KERRY ESTATES, LTD., The Warren House, Stanmore, **Duv Tereeta,** born 4th March, 1923, bred by J. O'Neill, Chittern, Crosshouses, Shewsbury ; s Dux Demar (640), d Duv Tigress (3526), s d Duv Tibber (785).

V.H.C.—LADY FITZGERALD, Buckland House, Farringdon, Berks., **Buckland Caprice,** born 26th December, 1923 ; s Buckland Inchcape, d Buckland Daisy, s d Valencia Royal Chief.—Brig.-Gen. LL. PALMER, Berryfield, Bradford-on-Avon, Wilts., **Lanky Celia,** born 27th December, 1923 ; s Southwater Duke, d Southwater Gertie, s d Valencia Linksman.

H.C.—LADY FITZGERALD, **Minley Curley,** born 7th May, 1924, bred by L. Currie, Minley Manor, Farnborough, Hants ; s Minley Major, d Minley Tabbie, s d Minley Rover.

C.—THE ELMHURST FARMING AND TRADING CO., LTD., Slinford, Sussex, **Elmhurst Darkie,** born 25th April, 1924, s Primrose Watersheen (446), d Gort Primrose XI (1959), s d Gort Prince II (718).

CLASS 136.—*Kerry Bull, calved in* 1922, 1923, *or* 1924. [6 entries.]

I. (**£10.**)—L. CURRIE, Minley Manor, Farnborough, Hants., **Hattingley Arthur,** born 7th February, 1922, bred by Capt. Zambra, M.C., and C. W. Milne, West Tisted Manor, Ropley, Hants. ; s Waterville Lord (424), d Coquet Alice (1795), s d Maildam (223).

II. (**£5.**)—KERRY ESTATES, LTD., The Warren House, Stanmore, **Raven of Carton,** born 17th April, 1923, bred by the Duke of Leinster, Carton, Maynooth, Co. Kildare ; s Bushmount Rory (634), d Delphinium 31st of Carton (4053), s d Prince 6th of Carton (771).

III. (**£2.**)—Brig.-Gen. LL. PALMER, Berryfield, Bradford-on-Avon, Wilts., **Lankey King Cole,** born 21st April, 1924 ; s Valencia Linksman, d Coquet Geranium, s d Coquet Duke.

R.—Capt. R. H. N. Mackay, R.N., Petham House, near Canterbury, **Hattingley Arnold,** born 25th September, 1922, bred by Hattingley All Black Farms, West Tisted Manor, Ropley, Hants. ; s Don Jose (507), d Castletown Bluebell (2896), s d Valencia Rubicon (463).

H.C.—B. W. A. Watney, Chaldon Mead, Caterham, **O.P.H. Drops Time,** born 1st August, 1923, bred by Capt. R. E. Palmer, Oatlands Park, Newdigate : s Ard Caein Dubh Jim, d O.P.H. Watersheen Boroihm, s d O.P.H. Gortmore Drops II.

DEXTER.

Class 137.—*Cow or Heifer, in-Milk, calved in or before* 1922. [11 entries,]

I. (£10.)—W. L. Everard, M.P., Ratcliffe Hall, Leicester, black, **Fillongley Forest Fawn** (2756), born 19th July, 1919, bred by Mrs. H. J. Nutt, Manor Farm, Ratcliffe-on-Ureake, Leicester ; s Fillongley Forester (630), d Who's Who (2540), s d Barrow Orphan (498).

II. (£5.)—Lt.-Col. W. O. Gibbs, Home Farm, Barrow Gurney, black, **Barrow Dora IV,** born 28th May, 1919, bred by H. M. Gibbs, Barrow Court, Flax Bourton, Somerset ; s Barrow Beau 3rd (622), d Barrow Dora 2nd, s d Oakridge Marsdon Jack. (Last calf 11th February, 1925).

III. (£2.)—Mrs. R. Magor, Springfield Lyons, Chelmsford, red, **Bryn Golden Red** (2720), born 10th February, 1918, bred by W. Haines ; s Oakridge Dane (571), d Bryn Sinfi, s d Barrow Cornet (421).

R.—Lady K. Hare, Brokenhurst Park, Brokenhurst, Hants., red, **Brokenhurst Peach** (2872), born 10th April, 1921 ; s Brokenhurst Morella (615), d Gort Peach 9th (2496), s d Gort Fred 2nd (584). (Last calf 25th March, 1925).

V.H.C.—Lt.-Col. W. O. Gibbs, black, **Barrow Bee 6th,** born 23rd June, 1921, bred by G. M. Gibbs, Gratwicke Hall, Barrow Gurney ; s Oakridge Starap, d Barrow Bee II, s d Barrow Captain. —H. G. Jones, Downford, Mayfield, Sussex, black, **Etna 2nd,** born 9th April, 1922, bred by M. Greenhill, Furnace Farm, Cowden, Kent ; s Grinstead Champion, d Delta II, s d Hever Boy. (Last calf 29th March, 1925).

C.—Mrs. C. M. L. Calvert, Banwell Castl Banwell, Somerset, black, **Maynard's Gladiolus** (3330), born 3rd November, 1921, bred by W. A. Pearce, Maynard's, Lingfield ; s Bagendon Nonsuch (687), d Brinsop Pansy (2864), s d Brinsop Shamrock (625).

Class 138.—*Dexter Heifer, calved in* 1923 *or* 1924. [16 entries.]

I. (£10.)—W. L. Everard, M.P., Ratcliffe Hall, Leicester, **Ratcliffe Aileen** (3359), born 24th June, 1923 ; s Oakridge Budget (750), d Brokenhurst Pansy (2871), s d Brokenhurst Morilla (651).

II. (£5.)—H. G. Jones, Downford, Mayfield, Sussex, black, **Downford Dewdrop,** born 13th May, 1923 ; s Downford Dandy, d Downford Darnel.

III. (£2.)—The Rev. W. Joyce (of "Exmoor"), Charles Rectory, Barnstaple, black, **Bouquet of Exmoor,** born 20th July, 1923 ; s Charlemagne of Exmoor, d Flower Girl, s d Answers (555).

R.—LADY K. HARE, Brokenhurst Park, Brokenhurst, Hants., black, **Brokenhurst Peach Bloom 2nd** (3245), born 9th May, 1923 ; s Oakridge Budget (750), d Brokenhurst Peach Bloom (2707), s d Brokenhurst Morella (651).

V.H.C.—Mrs. C. M. L. CALVERT, Banwell Castle, Banwell, Somerset, black, **Banwell Bess**, born 13th April, 1924 ; s Furnace Champion (Vol. 23, p.155), d Bess (2838 F.S.).—T. A. STEPHENS, Frensham Manor, Farnham, Surrey, black, **Hookstile Valeria**, born 18th May, 1924 ; s Hever Rex (741), d Venus of Hookstile (3041).

H.C.—LADY K. HARE, black, **Brokenhurst Peach 2nd**, born 2nd April, 1923 ; s Brokenhurst Morella (615), d Gort Peach 9th (2496), s d Gort Fred 2nd (584).

C.—Mrs. M. H. NEVILLE, Copthorne Farm, near Crawley, Sussex, black. **Copthorne Clove**, born 9th November, 1923 ; s Fillongley Forest Fiend (784). d Wightwick Dora, s d Oakridge Pat (673).

CLASS 139.—*Dexter Bull, calved in* 1922, 1923 *or* 1924. [7 entries.]

I. (£10.)—Mrs. C. M. L. CALVERT, Banwell Castle, Banwell, Somerset, black, **Wighwich Paul**, born 6th June, 1922, bred by Sir Walter A. Evans, Bart. Wighwich Hall, Wolverhampton ; s Oakridge Pat (673), d Oakridge Beryl (2055).

II. (£5.)—T. A. STEPHENS, Frensham Manor, Farnham, Surrey, black, **Hookstile Brutus**, born 16th August, 1923 ; s Hever Rex (741), d Pearl of Hookstile (3007).

III. (£2.)—Mrs. M. H. NEVILLE, Copthorne Farm, near Crawley, Sussex, black, **Copthorne Krinkel**, born 30th March, 1923 ; s April Fool (640), d Lady Elsie (2642 F.S.).

R.—Capt. W. D. HALL, M.C., M.P., Gwerynfed Park, Three Cocks, Brecon, red, **Byford Prince**, born 3rd April, 1923, bred by Mr. Wotton, Byford Bridge, Solers ; d Herd Book No. xxv.

V.H.C.—LADY K. HARE, Brokenhurst Park, Brokenhurst, Hants., black, **Brokenhurst Phil**, born 29th March, 1923 ; s Brokenhurst Philip (726), d Brokenhurst Woodbine (2711), s d Brokenhurst Rufus (601).

H.C.—H. G. JONES, Downford, Mayfield, Sussex, black, **Downford Dan**, born 15th April, 1922 ; s Downford Dandy, d Downford Dinah.—Mrs. H. R. PELLY, Lyndsays Farm, Ingatestone, Essex, black, **Grinstead Cherrystones**, born 19th May, 1923, bred by Lady Leonardslee, Horsham, Sussex ; s Morella Cherry (748), d Grinstead Artichoke, s d Brokenhurst Tinker (654).

(The Prizes in Class 140 were given by the Dexter Cattle Society.)

CLASS 140.—*Dexter Bull, calved in* 1924, *whose sire and dam were entered in the English Dexter or Royal Dublin Society's Herd Book.* [5 entries.]

I. (£10.)—Lt.-Col. W. O. GIBBS, Home Farm, Barrow Gurney, black, **Grinstead Wilfrid**, born 18th May, bred by Lady Loder, Leonardslee, Horsham ; s Brokenhurst Penny, d Grinstead Winifred, s d Braishfield Patrick.

II. (£3.)—Mrs. C. M. L. CALVERT, Banwell Castle, Banwell, Somerset, black, **Banwell Carol**, born 14th June ; s Wightwick Paul (864), d Carola (3085), s d Black Jack. (579).

III. (£2.)—LADY K. HARE, Brokenhurst Park, Brokenhurst, Hants., black, **Brokenhurst Pip,** born 14th May; s Oakridge Budget (750), d Peach Blossom of Claragh (2535), s d Gort Ned 5th (607).

R.—Mrs. M. H. NEVILLE, Copthorne Farm, near Crawley, Sussex, black, **Cardinal of Copthorne,** born 5th August, bred by Mrs. Lawford Stone, Woodcote Markbeech, Edenbridge; s Maynard's Michael (848), d Markbeech Moonstone, s d Grinstead Champion (632).

C.—H. G. JONES, Downford, Hayfield, Sussex, black, **Downford Desmon,** born 15th May; s Downford Doson, d Downford Diana, s d Downford Dandy.

SPECIAL PRIZE.

GIVEN BY THE DEXTER CATTLE SOCIETY.

The Devonshire Challenge Cup, for the Best Animal in Classes 137 *to* 140, *bred by Exhibitor, and entered in or eligible for the Dexter Herd Book. The Cup to be won by the same Exhibitor with different animals three years in succession before becoming his absolute property.* (Winner. 1924—Rev. W. W. Joyce).

I.—W. L. EVERARD, M.P., Ratcliffe Hall, Leicester, **Ratcliffe Aileen** (3359), born 24th June, 1923; s Oakridge Budget (750), d Brokenhurst Pansy (2871), s d Brokenhurst Morilla (651).

R.—T. A. STEPHENS, Frensham Manor, Farnham, Surrey, black, **Hookstile Brutus,** born 16th August, 1923; s Hever Rex (741), d Pearl of Hookstile (3007).

MILK RECORDED CATTLE.

(The Prizes in Class 141 were given by the Kent County Agricultural Society.)

CLASS 141.—*Ministry of Agriculture ear-marked cow of any breed, pedigree or non-pedigree, having given* 8,000*lbs. of milk or over in any one milk recording year* (*i.e. October* 1 *to October* 1 *in any year*) *or from April* 1, 1924 *to April* 1, 1925, *recorded in Kent and which had been owned by the Exhibitor for a full year.* [15 entries.]

I. (£10.)—R. G. CAMPBELL, Pickhurst Manor, Hayes, Kent, fawn and white, **Bealings Rose 5th** (16092), born 23rd August, 1921, bred by A. E. Howe, Grove Farm, Bealings, Suffolk; s Raymond of Carteret 2nd (3783), d Bealings Rose 2nd (14059), s d The Earl 2nd of Mouilpied (3413). (Last calf 14th March, 1925).

II. (£5.)—F. & T. NEAME, The Offices, Macknade, Faversham, Kent, **Macknade Harless** (47280), born 19th September, 1920; s Dunninald Halbesma (7703), d Macknade Fearless (29846), s d Macknade Frost (2955). (Last calf 26th January, 1925).

III. (£3.)—H. CALVERT, Bourne Place, Hildenborough, roan Shorthorn, **Girlie,** born 1918.

R.—Lt.-Col. A. DELME-RADCLIFFE, D.S.O. (I.A.Ret'd.), Shenley House, Headcorn, Kent, Dairy Shorthorn, **Pollen.** (Last calf 28th March, 1925).

V.H.C. F. & T. NEAME, **Macknade Event** (34728), born 29th May, 1918; s Golf Boter 4th (5131), d Macknade Novice (15382), s d Macknade Wogon (435).

H.C.—C. E. BURNELL, Down Farm, Tunbridge Wells, British Friesian, **Culverden Duchess II** (W.9752), born 10th March, 1920; d Culverden Duchess (A.S.R. 665).

C.—F. & T. NEAME, **Macknade Jem** (34736), born 23rd February, 1918; s Macknade Grieg (2959), d Macknade Thermos (10070), s d Macknade Tone (429).

SPECIAL PRIZE.

GIVEN BY MAJOR THE HON. J. J. ASTOR, THROUGH THE KENT MILK RECORDING SOCIETY.

"*The Hever Castle" Challenge Cup to the Kentish owner securing the highest position.*

I.—R. G. CAMPBELL, Pickhurst Manor, Hayes, Kent, fawn and white, **Bealings Rose 5th** (16092), born 23rd August, 1921, bred by A. E. Howe, Grove Farm, Bealings, Suffolk; s Raymond of Carteret 2nd (3783), d Bealings Rose 2nd (14059), s d The Earl 2nd of Mouilpied (3413). (Last calf 14th March, 1925).

R.—F. & T. NEAME, The Offices, Macknade, Faversham Kent, **Macknade Harless** (47280), born 19th September, 1920; s Dunninald Halbesma (7703), d Macknade Fearless (29846), s d Macknade Frost (2955). (Last calf 26th January, 1925).

MILK TEST.

CLASS 142.—*Cow, in-Milk, of any breed or cross, under 950lbs. live weight, yielding the largest quantity of milk, of normal character, containing at each time of milking not less than 3 per cent. fat, the period of lactation being taken into consideration.* [47 entries.]

I. (£10.) G. BERRY, Mount Bures, Bures, Suffolk, whole Jersey, **Postmistress,** born 23rd January, 1922; s Lord Blackberry, d Postage 2nd, s d Verdion. (Last calf 19th January, 1925).

II. (£5.)—H. C. PELLY, Kentwins, Nutfield, Surrey, whole Jersey, **Remember Flo 3rd,** born 30th August, 1920, bred by N. Gwynne, Bevenden Oxshott, Surrey; s Bevenden Primate (12548), d Remember Flo (xxviii 330), s d Florence Boy (10608).

III. (£2.)—E. A. STRAUSS, Kingston House, Abingdon, Berks., Jersey, **Sultan's Remembrance 6th,** born 16th March, 1914, bred by E. Matthews, C.V.O., Little Shardeloes, Bucks; s Noble Sultan of Oaklands (110), d Remembrance 9th, s d Carnation Crown (6493). (Last calf 15th March, 1925).

R.—R. BRUCE WARD, Godinton, Ashford, Kent, whole Jersey, **Progress,** born 4th July, 1918, s Marcher (13012), d Promise (Vol. 20, p.408), s d Oxford Sunbeam (8650). (Last calf 18th January, 1925).

CLASS 143.—*Cow, in Milk, of any breed or cross,* 950*lbs. live weight or over, yielding the largest quantity of Milk. of normal character, containing at each time of milking not less than* 3 *per cent. of fat, the period of lactation being taken into consideration.* [47 entries.]

I. (**£10.**) —G. HOLT-THOMAS, Northdean House, Hughenden, High Wycombe, Bucks., British Friesian, **Colton Sunray** (32650), born 31st October 1918, bred by H. Brown, Colton Mains, Dunfermline ; s Terling (imp.) Vic Bertus (4541), d Colton Sunset (6868), s d Colton Puritan (95). (Last calf 19th March, 1925).

II. (**£5.**) F. SYKES, Richings Park, Colnbrook, Bucks, British Friesian, **Kingswood Ceces Daisy** (39928), born 21st November, 1919, bred by H. Hale, Oxted, Surrey ; s Hedges Second Series (P.I.6427), d Hedges Hawkrigg Daisy (20342), s d Brookside Buttercups Boy (1015). (Last calf 12th February, 1925).

III. (**£2.**) -Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., Red Poll, **Sudbourne Comfit** (25965), born 10th August, 1916, bred by K. Clarke Sudbourne Hall, Orford, Suffolk : s Sudbourne Credit (10796), d Sudbourne Comfort (22355), s d Sudbourne Spicy (9751). (Last calf 27th March, 1925).

R. THE HACHE HERD, Muntham Home Farm, Findon, Worthing, Sussex, British Friesian, **Hache Berbram Umbra** (45510), born 8th April, 1920 ; s Terling (imp.) Vic Bertus (4541), d Colton Bram III (28010), s d Colton (imp.) Vic Bram (3705).

C. A. & J. BROWN, Hedges Farm, St. Albans, British Friesian, **Hedges Gemke Brand** (24960), born 14th October, 1916 ; s Hedges (imp.) Fokke 2nd (3993), d Hedges Baands Gem (14982), s d Hedges Highlander (1443). (Last calf 24th February, 1925).

C. -Lt.-Col. A. DELME-RADCLIFFE, D.S.O. (I.A.Ret'd.), Shenley House, Headcorn, Kent, Dairy Shorthorn, **Pollen.** (Last calf 28th March, 1925).

THE HACHE HERD, British Friesian, **Colton Pebble** (37906), born 2nd August, 1919 bred by Hugh Brown, Colton Mains, Dunfermline, N.B. ; s Terling (imp.) Vic Bertus (4541), d Colton Sands II (14326), s d Colton Puritan (95).

SPECIAL PRIZE.

Given by the British Friesian Cattle Society to the owner of the Cow awarded the greatest number of points in Classes 142 *and* 143, *provided that such cow is a British Friesian.*

I. (**£50.**)—G. HOLT-THOMAS, Northdean House, Hughenden, High Wycombe, Bucks., **Colton Sunray** (32650), born 31st October, 1918, bred by H. Brown Colton Mains, Dunfermline ; s Terling (imp.) Vic Bertus (4541), d Colton Sunset (6868), s d Colton Puritan (95). (Last calf 19th March, 1925).

BUTTER TEST.

CLASS 144.—*Cow, of any breed or cross, under* 950*lbs. live weight, obtaining the greatest number of points by the practical test of the separator and churn.* [44 entries.]

Certificates of Merit were also awarded to Jersey Cows, 4 *years old and under, obtaining* 30 *points, and Cow over* 4 *years old, obtaining* 35 *points.*

I. (£5.)—J. B. LLOYD, jun., Foxbury Stone Street, N. Sevenoaks, Kent, fawn, broken Jersey, **Dinard 6th,** born 7th October, 1920, bred by J. M. Davy, St. Helier, Jersey; s Masterman of Oaklands, d Dinard, s d Doble's Jolly Sultan. (Last calf 1st April, 1925).

II. (£3.)—G. BERRY, Mount Bures, Bures, Suffolk, whole Jersey, **Postmistress,** born 23rd January, 1922; s Lord Blackberry, d Postage 2nd, s d Verdion. (Last calf 19th January, 1925).

III. (£2.)—H. C. PELLY, Kentwins, Nutfield, Surrey, whole Jersey, **Remember Flo 3rd,** born 30th August, 1920, bred by N. Gwynne, Bevenden Oxshott, Surrey; s Bevenden Primate (12548), d Remember Flo (xxviii 330), s d Florence Boy (10608).

R.—E. A. STRAUSS, Kingston House, Abingdon, Berks., Jersey, **Sultan's Remembrance 6th,** born 16th March, 1914, bred by E. Mathews, C.V.O., Little Shardeloes, Bucks; s Noble Sultan of Oaklands, (110), d Remembrance 9th, s d Carnation Crown (6493). (Last calf 15th March, 1925).

Certificates of Merit.—G. BERRY, nearly whole, **New Year's Dinah,** born 1st January, 1921; s Lord Blackberry, d Nimrod's Dinah IV, s d Thorn's Aurelius 2nd. (Last calf 14th December, 1924).—Mrs. EVELYN, Wotton House, Dorking, whole, **Wotton Relustria,** born 11th July, 1917; s Illustrious (10289), d Record III, s d Astor. (Last calf 14th January, 1925).—R. BRUCE WARD, Godinton, Ashford, Kent, whole, **Miranda's Lass,** born 5th November, 1919; s Marionette's Lad (13351), d Fairlawne Miranda (Vol. 31, p.274), s d Sir Toby (12154). (Last calf 10th March, 1925).—R. BRUCE WARD, whole, **Progress,** born 4th July, 1918, ; s Marcher (13012), d Promise (Vol. 20, p.408), s d Oxford Sunbeam (8650). (Last calf 18th January, 1925).—R. BRUCE WARD, whole, **Darigold,** born 30th March, 1922; s Pandarus (14407), d Last of the Marigolds (Vol. 31, p.328), s d Reynard the Fox (12124). —J. B. LLOYD, jun., grey brown, **Volunteer's Darling,** born 10th July, 1920, bred by J. Bisson, St. John's, Jersey; s Jersey Volunteer, d Don Darling. (Last calf 6th January, 1925).—Mrs. C. S. OLIVER, Whitmore Lodge, Sunninghill, Berks., **Dorothy,** born 8th January, 1920, bred by Mr. Corrie, Lomfield Heath, Crawley. (Last cal 18th January, 1925).

CLASS 145.—*Cow, of any breed or cross,* 950*lbs. live weight and over, obtaining the greatest number of points by the practical test of the separator and churn.* [44 entries.]

I. (£5.)—G. HOLT-THOMAS, Northdean House, Hughenden, High Wycombe, Bucks., British Friesian, **Colton Sunray** (32650), born 31st October, 1918, bred by H. Brown, Colton Mains, Dunfermline; s Terling (imp.) Vic Bertus (4541), d Colton Sunset (6868), s d Colton Puritan (95). (Last calf 19th March, 1925).

II. (**£3.**)—F. Sykes, Richings Park, Colnbrook, Bucks., British Friesian, **Kingswood Ceces Daisy** (39928), born 21st November, 1919, bred by H. Hale, Oxted, Surrey; s Hedges Second Series (P.I. 6427), d Hedges Hawkrigg Daisy (20342), s d Brookside Buttercups Boy (1015). (Last calf 12th February, 1925).

III. (**£2.**)—F. & T. Neame, The Offices, Macknade, Faversham, Kent, British Friesian, **Macknade Jem** (34736), born 23rd February, 1918; s Macknade Grieg (2959), d Macknade Thermos (10070), s d Macknade Tone (429).

R.—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Readings, Berks, Red Poll, **Sudbourne Comfit** (25965), born 10th August, 1916, bred by K. Clarke, Sudbourne Hall, Orford, Suffolk; s Sudbourne Credit (10796), d Sudbourne Comfort (22355), s d Sudbourne Spicy (9751). (Last calf 27th March, 1925)·

SPECIAL PRIZES.

GIVEN BY THE RESPECTIVE BREED SOCIETIES.

For the South Devon Cow, obtaining the best results—(£5 5s.)

[NOT AWARDED].

For the British Friesian Cow obtaining the best results.

I. (**£5.**)—G. Holt-Thomas, Northdean House, Hughenden, High Wycombe, Bucks., **Colton Sunray** (32650), born 31st October, 1918, bred by H. Brown, Colton Mains, Dunfermline; s Terling (imp.) Vic Bertus (4541), d Colton Sunset (6868), s d Colton Puritan (95). (Last calf 19th March, 1925).

R.—F. Sykes, Richings Park, Colnbrook, Bucks, **Kingswood Ceces Daisy** (39928), born 21st November, 1919, bred by H. Hale, Oxted, Surrey; s Hedges Second Series (P.I. 6427), d Hedges Hawkrigg Daisy (20342), s d Brookside Buttercups Boy (1015), (Last calf 12th February, 1925).

For the Red Poll Cow obtaining the best results.

I. (**£5.**)—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, Berks., **Sudbourne Comfit** (25965), born 10th August, 1916, bred by K. Clarke, Sudbourne Hall, Orford, Suffolk; s Sudbourne Credit (10796), d Sudbourne Comfort (22355), s d Sudbourne Spicy (9751). (Last calf 27th March, 1925).

For the three Jersey Cows obtaining the best results and not less than 42 points.

I. (**Gold Medal**)—J. B. Lloyd, jun., Foxbury Stone Street, N. Sevenoaks, Kent, fawn, broken, **Dinard 6th,** born 7th October, 1920, bred by J. M. Davy, St. Helier, Jersey; s Masterman of Oaklands, d Dinard, s d Noble's Jolly Sultan. (Last calf 1st April, 1925).

II. (**Silver Medal**)—G. Berry, Mount Bures, Bures, Suffolk, whole, **Postmistress,** born 23rd January, 1922; s Lord Blackberry, d Postage 2nd, s d Verdion. (Last calf 19th January, 1925).

III. (**Bronze Medal**)—H. C. Pelly, Kentwins, Nutfield, Surrey, whole Jersey, **Remember Flo 3rd,** born 30th August, 1921, bred by N. Gwynne, Bevenden Oxshott, Surrey; s Bevenden Primate (12548), d Remember Flo (xxviii 330), s d Florence Boy (10608).

For the Guernsey Cow obtaining the best results.

I. (£5.)—A. C. Beatty, Calehill Park, Little Chart, Kent, fawn and white Guernsey, **Calehill Golden Lady** (15117), born 27th July, 1920; s Murrell Golden Lad (3764), d Violet 4th of Hillside (14910), s d Brilliant of the Grée 4th (3822 P.S.).

R.—Mrs. Howard Palmer, Heathland's Wokingham, Berks., fawn and white, **Mildred 2nd of Bel Air** (14601), born 12th February, 1918, bred by Hon. C. R. Molesworth, Hotel Bel Air, Sark; s My Delight of Park Farm (3753 P.S.). d Mildred of Bel Air (13752), s d Sylph's Majestic (3042 P.S.).

Challenge Cup.

Given by R. Bruce Ward, Esq., to the Member of the Kent Milk Recording Society whose animal secured the highest position in Class 144 *or* 145.

I.—J. B. Lloyd, jun., Foxbury Stone Street, N. Sevenoaks, Kent, fawn, broken, **Dinard 6th**, born 7th October, 1920, bred by J. M. Davy, St. Helier, Jersey; s Masterman of Oaklands, d Dinard, s d Noble's Jolly Sultan. (Last calf 1st April, 1925).

SHEEP.

DEVON LONGWOOLLED.

(£10 towards the prizes in these Classes were given by the Devon Longwoolled Sheep Breeders' Society.)

Class 146.—*Devon Longwoolled Shearling Ram.* [4 entries.]

I. (£10.)—T. J. Pearcey, Peadhill, Tiverton, Devon.

II. (£5.)—T. J. Pearcey.

III. (£2.)—F. White, Torweston, Williton, Somerset.

R.—F. White.

Class 147.—*Pen of three Devon Longwoolled Shearling Ewes.* [3 entries.]

I. (£10.)—F. White, Torweston, Williton, Somerset.

II. (£5.)—F. White.

III. (£2.)—T. J. Pearcey, Peadhill, Tiverton, Devon.

KENT OR ROMNEY MARSH.

(£60 towards the Prizes in these Classes were given by the Kent or Romney Marsh Sheep Breeders' Association.)

Class 148.—*Kent or Romney Marsh Two Shear Ram.* [9 entries.]

I. (£10.)—J. E. Quested, The Firs, Cheriton, Kent.

II. (£5.)—J. E. Quested.

III. (**£2.**)—THE EARL OF GUILFORD, Waldershare Park, Dover.

R. and **H.C.**—J. R. BETTS, Greenhill Farm, Otham, Maidstone.

H.C.—W. MISKIN, White Hall, Hoo, Rochester.

CLASS 149. *Kent or Romney Marsh Shearling Ram.* [20 entries.]

I. (**£10.**)—J. E. QUESTED, The Firs, Cheriton, Kent.

II. (**£5.**)—J. E. QUESTED.

III. (**£4.**)—J. E. QUESTED.

IV. (**£3.**)—A. STEVENS, Davington Hall, Faversham, Kent.

V. (**£2.**)—A. STEVENS.

R. and **H.C.**—THE EARL OF GUILFORD, Waldershare Park, Dover.

H.C.—Lt.-Col. M. BELL, Bourne Park, Canterbury.—THE EARL OF GUILDFORD.

CLASS 150.—*Pen of five Kent or Romney Marsh Shearling Rams.* [9 entries.]

I. (**£10.**)—J. E. QUESTED, The Firs, Cheriton, Kent.

II. (**£5.**)—J. E. QUESTED.

III. (**£3.**)—THE EARL OF GUILFORD, Waldershare Park, Dover.

IV. (**£2.**)—A. STEVENS, Davington Hall, Faversham, Kent.

R. and **H.C.**—Lt.-Col. M. BELL, Bourne Park, Canterbury.

H.C.—J. R. BETTS, Greenhill Farm, Otham, Maidstone.—C. PETLEY & Co., Staple, Canterbury.

CLASS 151.—*Pen of three Kent or Romney Marsh Ram Lambs, dropped in* 1925. [6 entries.]

I. (**£10.**)—J. E. QUESTED, The Firs, Cheriton, Kent.

II. (**£5.**)—J. E. QUESTED.

III. (**£2.**)—C. PETLEY & Co., Staple, Canterbury.

R. and **H.C.**—H. E. BENNETT, Hawkenbury, Staplehurst.

CHAMPION PRIZE.

GIVEN BY THE KENT COUNTY AGRICULTURAL SOCIETY.

Best Ram or Ram Lamb in Classes 148 *to* 151.

I. (**£10.**)—J. E. QUESTED, The Firs, Cheriton, Kent.

R.—J. E. QUESTED.

CLASS 152.—*Pen of three Kent or Romney Marsh Shearling Ewes.* [9 entries.]

I. (**£10.**)—J. E. QUESTED, The Firs, Cheriton, Kent.

II. (**£5.**)—J. E. QUESTED.

III. (**£2.**)—THE EARL OF GUILFORD, Waldershare Park, Dover.

R. and **H.C.**—THE EARL OF GUILFORD.

H.C.—H. E. BENNETT, Hawkenbury, Staplehurst.—A. L. MERCER, Norton Court, near Sittingbourne.

CLASS 153.—*Pen of* 3 *Kent or Romney Marsh Ewe Lambs, dropped in* 1925. [6 entries.]

I. (**£10.**)—J. E. QUESTED, The Firs, Cheriton, Kent.

II. (**£5.**)—J. E. QUESTED.

III. (**£2.**)—J. R. BETTS, Greenhill Farm, Otham, Maidstone.

R. and **H.C.**—C. PETLEY & CO., Staple, Canterbury.

H.C.—H. E. BENNETT, Hawkenbury, Staplehurst.—A. L. MERCER, Norton Court, near Sittingbourne.

CHAMPION PRIZE.

GIVEN BY THE KENT COUNTY AGRICULTURAL SOCIETY.

Best Kent or Romney Marsh Ewe or Ewe Lamb in Classes 152 *or* 153.

I. (**£10.**)—J. E. QUESTED, The Firs, Cheriton, Kent.

R.—J. E. QUESTED.

SOUTHDOWN.

(£17 towards the Prizes in these Classes were given by the Southdown Sheep Society).

CLASS 154 —*Southdown Two Shear Ram* [6 entries.]

I. (**£10.**)—Sir J. COLMAN, Bart., Gatton Park, Surrey.

II. (**£5.**)—THE LADY LUDLOW, Luton Hoo, Luton, Beds.

III. (**£2.**)—LADY FITZGERALD, Buckland House, Faringdon, Berks.

R.—Mrs. EGERTON HAMMOND, St. Albans Court, Nonington, Dover, bred by H.M. the King, Sandringham.

CLASS 155.—*Southdown Shearling Ram.* [9 entries.]

I. (**£10.**)—Sir J. COLMAN, Bart., Gatton Park, Surrey.

II. (**£5.**)—LADY FITZGERALD, Buckland House, Faringdon, Berks.

III. (**£2.**)—THE LADY LUDLOW, Luton Hoo, Luton, Beds.

R.—LADY FITZGERALD.

H.C.—THE LADY LUDLOW.

C.—Mrs. E. HAMMOND, St. Albans Court, Donnington, Dover.

SPECIAL PRIZE.

Given by the Southdown Sheep Society, under Condition 65, *subject to there being at least three competitors—Silver Medal or* £1 *for the best Southdown Ram in Classes* 154 *and* 155.

I.—SIR J. COLMAN, Bart., Gatton Park, Surrey.

R.—THE LADY LUDLOW, Luton Hoo, Luton, Beds.

Class 156.—*Pen of three Southdown Shearling Ewes.* [3 entries.]

I. (**£10.**)—The Lady Ludlow, Luton Hoo, Luton, Beds.

II. (**£5.**)—Sir J. Colman, Bart., Gatton Park, Surrey.

III. (**£2.**)—J. P. Morgan, Wall Hall, Aldenham, Watford, Herts.

HAMPSHIRE DOWN.

(£15 towards the Prizes in these Classes and the Champion Prize were given by the Hampshire Down Sheep Breeders' Association).

Class 157.—*Hampshire Down Shearling Ram.* [7 entries.]

I. (**£10.**)—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, Berks.

II. (**£5.**)—V. T. Thompson, Norton Manor, Sutton Scotney.

III. (**£2.**)—Col. S. Whitburn, Amport, Andover, Hants.

R. and **V.H.C.**—Major and Mrs. F. H. T. Jervoise, Herriard Park, Basingstoke.

H.C.—J. Goldsmith, Blendworth, Horndean, Cosham, Hants.

Class 158.—*Hampshire Down Ram Lamb, dropped in* 1925. [6 entries.]

I. (**£7.**)—Col. S. Whitburn, Amport, Andover, Hants.

II. (**£5.**)—V. T. Thompson, Norton Manor, Sutton Scotney.

III. (**£2.**) Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, Berks.

R. and **V.H.C.**—Major and Mrs. Jervoise, Herriard Park, Basingstoke.

H.C.—J. Goldsmith, Blendworth, Horndean, Cosham, Hants.

Class 159.—*Pair of Hampshire Down Ram Lambs, dropped in* 1925. [5 entries.]

I. (**£10.**)—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, Berks.

II. (**£5.**)—Col. S. Whitburn, Amport, Andover, Hants.

III. (**£2.**)—Major and Mrs. F. H. T. Jervoise, Herriard Park, Basingstoke.

R. and **V.H.C.**—V. T. Thompson, Norton Manor, Sutton Scotney.

Class 160.—*Pen of three Hampshire Down Shearling Ewes.* [3 entries.]

I. (**£10.**)—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, Berks.

II. (**£5.**)—Col. S. Whitburn, Amport, Andover, Hants., bred by Lord Wandsworth Agricultural College, Long Sutton, Basingstoke.

III. (**£2.**)—Major J. A. Morrison.

CHAMPION PRIZE.

Best Ram, Ram Lamb, Pair or Pen, in Classes 157 *to* 160.

I. (**£5.**)—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks.

R.—Col. S. WHITBURN, Amport, Andover, Hants.

OXFORD DOWN.

CLASS 161.—*Oxford Down Shearling Ram.* [3 entries]

I. (**£10.**)—H. W. STILGOE, The Grounds, Adderbury, near Banbury, Oxon.

II. (**£5.**)—H. W. STILGOE.

III. (**£2.**)—H. W. STILGOE.

CLASS 162 —*Pair of Oxford Down Ram Lambs, dropped in* 1925 [3 entries]

I. (**£10.**)—Major R. F. FULLER, Great Chalfield, Melksham, Wilts.

II. (**£5.**)—H. W. STILGOE, The Grounds, Adderbury, near Banbury, Oxon.

III. (**£2.**)—E. JEFFRIES, Glebe Farm, Windrush, Burford, Oxon.

CLASS 163 —*Pen of three Oxford Down Shearling Ewes* [2 entries.]

I. (**£10.**)—H. W. STILGOE, The Grounds, Adderbury, near Banbury, Oxon.

II. (**£5.**)—E. JEFFRIES, Glebe Farm, Windrush, Burford, Oxon.

(The Prize in Class 164 were given by the Oxford Down Sheep Breeders' Association, and were withheld until the animals awarded the Prizes were registered in the Flock Book.

CLASS 164 —*Pen of three Oxford Down Ewe Lambs, dropped in* 1925. [3 entries]

I. (**£6.**)—E. JEFFRIES, Glebe Farm, Windrush, Burford, Oxon.

II. (**£3.**)—H.W. STILGOE, The Grounds, Adderbury, near Banbury, Oxon.

III. (**£1.**)—Major R. F. FULLER, Great Chalfield, Melksham, Wilts.

DORSET HORN.

(The Animals entered in Classes 165 and 167 must have been shorn bare in the year of the Show.)

(£18 towards the Prizes in Classes 165 to 168 were given by the Dorset Horn Sheep Breeders' Association).

CLASS 165 —*Dorset Horn Shearling Ram* [2 entries]

I. (**£10.**)—F. J. MERSON & SONS, Farringdon, North Petherton, Bridgwater.

CLASS 166.—*Pair of Dorset Horn Ram Lambs, dropped after November 1st*, 1924. [2 entries.]

I. (£10.)—A. A. BROUGHTON, Impens, North Petherton, Bridgwater, Som.

II. (£5.)—J. J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

CLASS 167.—*Pen of three Dorset Horn Shearling Ewes.* [3 entries.

I. (£10.)—A. A. BROUGHTON, Impens, North Petherton, Bridgwater, Som.

II. (£5.)—F. J. MERSON & SON, Farringdon, North Petherton.

CLASS 168.—*Pen of three Dorset Horn Ewe Lambs, dropped after November 1st*, 1924. [2 entries.]

I. (£10.)—F. J. MERSON & SON, Farringdon, North Petherton.

DORSET DOWN.

(£15 towards the Prizes in these Classes and the Champion Prize were offered by the Dorset Down Sheep Breeders' Association.

CLASS 169.—*Dorset Down Shearling Ram—First prize*, £10—*second*, £5—*third*, £2.

[NO ENTRY.]

CLASS 170.—*Pair of Dorset Down Ram Lambs, dropped in* 1925—*First prize*, £10—*second*, £5—*third*, £2.

[NO ENTRY.]

CLASS 171.—*Pen of three Dorset Down Shearling Ewes—First prize*, £10—*second*, £5—*third*, £2.

[NO ENTRY.]

CHAMPION PRIZE.

Best Ram, Pair or Pen, in the Dorset Down Classes—£5.

SUFFOLK.

(£25 towards the Prizes in these Classes were given by the Suffolk Sheep Society).

CLASS 172.—*Suffolk Shearling Ram.* [10 entries.]

I. (£10.)—A. PRESTON JONES, Mickleover House, near Derby.

II. (£5.)—R. H. FOA, Holywell Park, Wrotham, Kent, bred by F. M. L. Slater, Weston Colville, Cambs.

III. (£2.)—A. PRESTON JONES, bred by F. M. L. Slater, Weston Colville, Cambs.

R.—VISCOUNT FOLKESTONE, Estate Office, Longford Castle, Salisbury.

H.C.—R. H. FOA, bred by J. W. & F. D. Eagle, The Hall, Walton-on-Naze.

C.—THE EARL OF DARNLEY, Cobham, Kent.

CLASS 173.—*Pair of Suffolk Ram Lambs, dropped in* 1925. [10 entries.]

I. (**£10.**)—CO-OPERATIVE WHOLESALE SOCIETY, LTD., Estate Office, Cherhill, Calne.

II. (**£5.**)—C. COUSINS, Stisted, Braintree, Essex.

III. (**£2.**)—VISCOUNT FOLKESTONE, Estate Office, Longford Castle, Salisbury.

R.—R. H. FOA, Holywell Park, Wrotham, Kent.

H.C.—HOLLESLEY BAY LABOUR COLONY, Hollesley, Suffolk.

C.—THE EARL OF DARNLEY, Cobham, Kent.

CLASS 174.—*Pen of three Suffolk Shearling Ewes.* [4 entries.]

I. (**£10.**)—C. COUSINS, Stisted, Braintree, Essex.

II. (**£5.**)—A. PRESTON JONES, Mickleover House, near Derby.

III. (**£2.**)—THE EARL OF DARNLEY, Cobham, Kent.

R.—THE EARL OF DARNLEY.

CLASS 175.—*Pen of three Suffolk Ewe Lambs, dropped in* 1925. [9 entries.]

I. (**£10.**)—CO-OPERATIVE WHOLESALE SOCIETY, LTD., Estate Office, Cherhill, Calne.

II. (**£5.**)—VISCOUNT FOLKESTONE, Estate Office, Longford Castle, Salisbury.

III. (**£2.**)—C. COUSINS, Stisted, Braintree, Essex.

R.—R. H. FOA, Holywell Park, Wrotham, Kent.

H.C.—HOLLESLEY BAY LABOUR COLONY, Hollesley, Suffolk.

C.—A. PRESTON JONES, Mickleover House, near Derby.

CHAMPION PRIZE.

GIVEN BY SIR F. HERVEY BATHURST, BART., D.S.O.

A Silver Cup for the best Ram, Pair or Pen, in the Suffolk Classes. The Cup to be won three years in succession before becoming the absolute property of the owner. (Winner, 1924—C. Cousins).

I.—CO-OPERATIVE WHOLESALE SOCIETY, LTD., Estate Office, Cherhill, Calne.

R.—A. PRESTON JONES, Mickleover House, near Derby.

RYELAND.

(£15 of the Prizes in these Classes were given by the Ryeland Sheep Society).

CLASS 176.—*Ryeland Ram, 2 Shear and upwards.* [5 entries.]

I. (**£10.**)—T. L. MARTIN, Ashe Warren House, Overton, Hants., bred by F. T. Gough, Lugwardine, Hereford.

II. (**£5.**)—T. L. MARTIN.

III. (**£2.**)—W. G. Buchanan, Manor House Farm, Abergavenny, bred by Mrs. H. Huddleston, Clytha Park, near Abergavenny.

R.—G. B. Grist, Box, Minchinhampton, Glos., bred by D. J. Thomas, Falachdda Farm, near Brecon.

H.C.—C. F. Campbell, Everlands, Sevenoaks, Kent.

Class 177.—*Ryland Shearling Ram.* [6 entries.]

I. (**£10.**)—T. L. Martin, Ashe Warren House, Overton, Hants.

II. (**£5.**)—E. W. Langford, Ltd., Wye Bridge, Hereford.

III. (**£2.**)—E. W. Langford, Ltd.

R.—T. L. Martin.

C.—Hon. R. Stafford Cripps, Goodfellows, Filkins, Lechlade, Glos.

Class 178.—*Pair of Ryeland Ram Lambs, dropped in* 1925. [4 entries.]

I. (**£10.**)—T. L. Martin, Ashe Warren House, Overton, Hants.

II. (**£5.**)—T. L. Martin.

III. (**£2.**)—D. B. Grist, Box, Minchinhampton, Glos.

R.—Hon. R. Stafford Cripps, Goodfellows, Filkins, Lechlade, Glos.

Class 179.—*Pen of three Ryeland Shearling Ewes.* [4 entries.]

I. (**£10,**)—E. W. Langford, Ltd., Wye Bridge, Hereford.

II. (**£5.**)—T. L. Martin, Ashe Warren House, Overton, Hants.

III. (**£2.**) -Hon R. Stafford Cripps, Goodfellows, Filkins, Lechlade. Glos.

R.—C. F. Campbell, Everlands, Sevenoaks, Kent.

KERRY HILL.

(£12 towards the Prizes in Classes 180 to 182 were given by the Kerry Hill (Wales) Flock Book Society, and animals must have been shown uncoloured: the names and Flock Book Number of Rams to be given and in Classs 182 the Ewes to be bred from one flock and the Breeders' names must be given).

Class 180.—*Kerry Hill Ram,* 2 *Shear and upwards.* [4 entries.]

I. (**£10.**)—E. D. Moore, Brampton Brian, **Maesmawr Recorder**, bred by T. E. Kinsey, Maesmawr, Caersws.

II. (**£5.**)—Dinam Estates Company (D. Davies, M.P.), Llandinam Hall Farm, Llandinam, Co. Montgomery, **Dinam Officer** (7478).

III. (**£2.**)—Mrs. Edith Tate, Swinford Lodge, Rugby, **Swinford Hotspur** (9596).

Class 181.—*Kerry Hill Shearling Ram.* [6 entries.]

I. (**£10.**)—The Marquess of Londonderry, K.G., P.C., Plas Machynlleth, Montgomeryshire, bred by T. Jones & Sons, Great Weston, Montgomeryshire.

II. (**£5.**)—DINAM ESTATES Co. (D. Davies, M.P.), Llandinam Hall Farm, Llandinam, Co. Montgomery, **Gwennygoe Effusion** (Ear No. 102).

III. (**£2.**)— E. D. MOORE, Brampton Brian, **Brampton Drummer.**

R.— Mrs. EDITH TATE, Swinford Lodge, Rugby, **Winsbury Goalkeeper,** bred by J. T. Beavan, Winsbury, Chirbury, Salop.

CLASS 182.—*Pen of three Kerry Hill Shearling Ewes.* [8 entries.]

I. (**£10.**)—THE MARQUESS OF LONDONDERRY, K.C., P.C., Plas Machynlleth, Machynlleth, Montgomeryshire.

II. (**£5.**)—DINAM ESTATES Co. (D. Davies, M.P.), Llandinam Hall Farm, Llandinam, Co. Montgomery.

III. (**£2.**)—Mrs. EDITH TATE, Swinford Lodge, Rugby.

R.—E. D. MOORE, Brampton Brian.

H.C.—D. P. BARNETT, Walterston, Llancarfan, Cowbridge.

CHAMPION PRIZE.

GIVEN BY H.R.H. THE PRINCE OF WALES, K.G.

A Challenge Cup, value £20, *for the best Kerry Hill animal exhibited in Class* 181 *or* 182, *to be won three times in succession or four times altogether before becoming the property of the Exhibitor.* (Winners, 1924—Dinam Estates Co.).

I.—THE MARQUESS OF LONDONDERRY, K.G., P.C., Plas Machynlleth, Machynlleth, Montgomeryshire, bred by T. Jones & Sons, Great Weston, Montgomeryshire.

R.—DINAM ESTATES Co. (D. Davies, M.P.), Llandinam Hall Farm, Llandinam, Co. Montgomery.

GOATS.

(£14 5s. 0d. towards the Prizes in these Classes were given through the British Goat Society).

CLASS 183.—*Female Goat, in-Milk, any age, Toggenburg, British Toggenburg, British Alpine, Saanen, or British Saanen.* [7 entries.]

I. (**£2 10s.**)—Mrs. R. K. MORCOM, The Clock House, Bromsgrove, White Saanen Hornless, **Wynanda of Westons** (S.45), born April 6th, 1923, bred by Miss C. Chamberlain, Westons, Lyndhurst, Hants.; s Van Tromp (S.30) d Wilhelmina (S.20). (Last kid, 14th March, 1925).

II. (**£1 10s.**)— Miss E. SKIDMORE, Ashley Leigh, Box, Wilts., white, British Saanen, **Heddon Sainfoin** (H.B.4791), born 4th March, 1921; s †Peter of Bashley (4207), d Wigmore Clover **Q*, s d †Topaz (H.B.2040). (Last kid 27th March. 1925).

III. (**15s.**)—Miss E. SKIDMORE, white, British Saanen, **Heddon Spot,** born 27th May, 1923; s †Peter of Bashley (H.B.4207), d Cerese (P.R.). (Last kid 23rd March 1925).

R.—Miss J. PORT, Kingswood, Tunbridge Wells, white, British Saanen, **Heddon Superb** (6113), born 11th May, 1923, bred by Miss E. Skidmore, Ashley Leigh, Box, Wilts.; s Schnapps (S.34), d Heddon Sainfoin (4791), s d Peter of Bashley (4207) and Wigmore Clover (2197).

H.C.—Miss J. PORT, dark chocolate, British Toggenburg, **Roughets Moneymaker** (5215), born 7th March, 1922, bred by Mrs. Amsden, Roughets, Weald, Sevenoaks: s Cornish Jester (4188), d Brooklyn Iris (4530), s d Edenstead Capricorn and Brooklyn Primrose. (Last kid 2nd April, 1925).

C.—Miss E. SKIDMORE, white, British Saanen, **Heddon Supreme** (6114), born 11th May, 1923: s Schnapps (H.B.S.34), d Heddon Sainfoin (H.B.4791), s d †Peter of Bashley (H.B.4207). (Last kid 12th February, 1925).

CLASS 184.—*Female Goat, in-Milk, any age Any other variety* [4 entries]

I. (£2 10s.)—Mrs. R. K. MORCOM, The Clock House, Bromsgrove, biscuit colour, A.S.N., Hornless, **Leases Fortitude**** (H.B.3710), born 14th March, 1919, bred by Mrs. Straker, Hexham; s †Leases Haydon (H.B.3265), d Leases Lady Fortune* (H.B.2173), s d Broxbourne Adveral (H.B.1947). (Last kid 12th March, 1925).

II. (£1 10s.)—R. TURNER, Budsham Green, Elmsted, Ashford, Kent, black and white, Anglo-Nubian, **Herne Bay Princess** (A.N.1263), Transfer No. 65), born 16th February, 1920, bred by Mrs. M. Grace, The Rosary, Charing, Kent; s Ruritania Hawthorn (A.N.1059), d Bruntmoor Bunty (A.N.1031), s d Edenbreck Mides (A.N.740). (Last kid, 27th January, 1925).

III. (15s.)—Miss M. L. WILSON, The Firs, Willesborough, Ashford, Kent, mixed, Horned, **Wire Mill Pretty Primrose** (H.B.5253, K.R. 9441), born 26th February, 1922, bred by Miss L. G. Whitfield, Burwash, Sussex; s †Professor of Bashley (H.B.3940), d Grange Glisten (H.B.2685). (Last kid 17th April, 1925).

R.—R. TURNER, black and white, Anglo-Nubian, **Garrochty Betty** (A.N.1620, Transfer No. 50), born 25th April, 1923, bred by Mrs. S. Macdonald, Garrochty, Kingarth, Isle of Bute: s Garrochty Domino (A.N.1407), d Herne Bay Princess (A.N.1263), s d Ruritania Hawthorn (A.N.1059). (Last kid 3rd February, 1925).

CLASS 185—*Goatling Any variety, over one year, but not exceeding two years.* [9 entries.]

I. (£2 10s.)—Miss J. PORT, Kingswood, Tunbridge Wells, white, British Saanen, **Wells Pearl** (6427), born 1st April, 1924: s C.H.†Ridgeway Ranunculus (5528), d Roughets Moneymaker (5215), s d Cornish Jester (4188). and Brooklyn Iris (4530).

II. (£1 10s.)—Mrs. R. K. MORCOM, The Clock House, Bromsgrove, white, Anglo-Nubian-Swiss, **Cornish Snowdrop** (H.B.6449), born 26th January, 1924; s C.H.†Dochfour Arrogance (H.B.3503), d Cornish Pansy (H.B.5655), s d †Tremedda Perceval (H.B.3136).

III. (15s.)—Miss J. PORT, white, British Saanen, **Atherstone Sheila** (6773), born 14th March, 1924, bred by E. A. Walmisley, Priors Farm, Mattingley Green, Hartley Wintney, Hants.; s Atherstone Peter (4248), d Atherstone Sylvia (5461), s d Atherstone Faithless (4592).

R.—Miss E. SKIDMORE, Ashley Leigh, Box, Wilts., biscuit, **Heddon Sansovino** (6733), born 23rd April, 1924; s †Peter of Bashley (H.B.4207), d Heddon Spring (5263), s d †Peter of Bashley (4207).

H.C.—Mrs. H. B. MOSS, Marsh View, Hythe, Kent, light brown, Togg markings, Hornless, **Jacqueline** (H.B.6444), born 3rd April, 1924; s Carpentier (H.B. T.528), d Rushetts Linnet (H.B.5329), s d †Homestall Dragoon (H.B. 4542).

C.—Miss C. M. M. DALE, Hillsboro', Sandgate, Kent, brown and white, Hornless, **Rushetts Joy** (H.B.6510), born 29th March, 1925, bred by Miss C. Scaramanga, Rushetts, Crawley Down, Sussex; s Carpentier (T.528), d Binfield Tiny (2758), s d Binfield Lord (2757).

CLASS 186.—*Male Goat. Any variety, over one year, but not exceeding two years.* [5 entries.]

I. (£2 10s.)—Miss J. PORT, Kingswood, Tunbridge Wells, mottled, Anglo-Nubian, **Theydon Blue Boy** (A.N.1613), born 28th February, 1924, bred by Miss K. Pelly, Theydon Place, Epping; s Sadberge Marcus Coriolanus (A.N. 1003), d Nash Bella 9* (A.N.1112), s d Edenbreck Midas (A.N.740) and Nash Eva (A.N.856).

II. (£1 10s.)—Miss C. M. M. DALE, Hillsboro', Sandgate, Kent, light brown, white markings, Togg, **Billiwells** (H.B.6443), born 3rd April, 1924, bred by Mrs. H. B. Moss, Marsh View, Hilcrest Road, Hythe, Kent; s Carpentier (T.528), d Rushetts Linnet (5329), s d †Homestall Dragoon (H.B.4542).

III. (15s.)—Miss M. L. WILSON, The Firs, Willesborough, Ashford, Kent, white, Hornless, **†Beechmead Snowey** (H.B.6844), born 22nd March, 1924, bred by Mrs. Hines, Watley, Twyford, Winchester; s †Dochfour White Pearl (H.B.4465), d Beechmead Snow *Q*Q** (H.B.5405).

CLASS 187.—*Male Goat. Any variety, over two years.* [4 entries.]

I. (£2 10s.)—Miss E. SKIDMORE, Ashley Leigh, Box, Wilts., white, **Schnapps**, Imported.

II. (£1 10s.)—R. TURNER, Bodsham Green, Elmsted, Ashford, Kent, Anglo-Nubian, black, tan marking, **†Theydon Desmond** (A.N.1388, Transfer No. 54), born 13th May, 1921, bred by Miss K. Pelly, Theydon Place, Epping, Essex; s Theydon Angus (A.N.1136), d Theydon Dimples Q* (A.N.1061), s d Edenbreck Klito (947).

III. (15s.)—Miss BIGNOLD, Sparks Hall, Sutton Valence, Toggenburg, **†Towcester Plucky Boy** (H.B.4008) (B.957), born 17th June, 1919, bred by The Hon. Mrs. Pomeroy, Towcester; s †Edenstead Pluck, d Glenshee Asphodel*.

CLASS 188.—*Milking Competition, for quantity and time only (three milkings).* [15 entries.]

I. (£2 10s.) and Star.—Mrs. R. K. MORCOM, The Clock House, Bromsgrove, biscuit colour, A.S.N., Hornless, **Leases Fortitude**** (H.B.3710), born 14th March, 1919, bred by Mrs. Straker, Hexham; s †Leases Haydon (H.B.3265), d Leases Lady Fortune* (H.B.2173), s d Broxbourne Adveral (H.B.1947). (Last kid 12th March, 1925).

II. (£1 10s.) and **Star.**—Miss J. Port, Kingswood, Tunbridge Wells, dark chocolate, British Toggenburg, **Roughets Moneymaker** (5215), born 7th March, 1922, bred by Mrs. Amsden, Roughets, Weald, Sevenoaks ; s Cornish Jester (4188), d Brooklyn Iris (4530), s d Edenstead Capricorn and Brooklyn Primrose. (Last kid 2nd April, 1925).

III. (15s.)—Miss M. L. Wilson, The Firs, Willesborough, Ashford, Kent, mixed, Horned, **Wire Mill Pretty Primrose** (H.B.5253, K.R.9441), born 26th February, 1922, bred by Miss L. G. Whitfield, Burwash, Sussex ; s †Professor of Bashley (H.B.3940), d Grange Glisten (H.B.2685). (Last kid 17th April, 1925).

Special Prizes.

Given by The British Goat Society.

A Challenge Certificate for the Best Female Goat over two years that has borne a kid.

I.—Mrs. R. K. Morcom, The Clock House, Bromsgrove, biscuit colour, A.S.N., Hornless, **Leases Fortitude**** (H.B.3710), born 14th March, 1919, bred by Mrs. Straker, Hexham ; s †Leases Haydon (H.B.3265), d Leases Lady Fortune* (H.B.2173), s d Broxbourne Adveral (H.B.1947). (Last kid 12th March, 1925).

A Challenge Certificate for the Best Dual Purpose Goat over two years, that has borne a kid.

I.—Mrs. R. K. Morcom, The Clock House, Bromsgrove, biscuit colour, A.S.N., Hornless, **Leases Fortitude**** (H.B.3710), born 14th March, 1919, bred by Mrs. Straker, Hexham ; s †Leases Haydon (H.B.3265), d Leases Lady Fortune* (H.B.2173), s d Broxbourne Adveral (H.B.1947). (Last kid 12th March, 1925).

R.—Miss J. Port, Kingswood, Tunbridge Wells, dark chocolate, British Toggenburg, **Roughets Moneymaker** (5215), born 7th March, 1922, bred by Mrs. Amsden, Roughets, Weald, Sevenoaks ; s Cornish Jester (4188), d Brooklyn Iris (4530), s d Edenstead Capricorn and Brooklyn Primrose. (Last kid 2nd April, 1925).

A Challenge Certificate for the Best Male Goat over one year.

I.—Miss E. Skidmore, Ashley Leigh, Box, Wilts., white, **Schnapps,** Imported.

A Bronze Medal for the Best Female Exhibit.

I.—Mrs. R. K. Morcom, The Clock House, Bromsgrove, biscuit colour, A.S.N., Hornless, **Leases Fortitude**** (H.B.3710), born 14th March, 1919, bred by Mrs. Straker, Hexham ; s †Leases Haydon (H.B.3265), d Leases Lady Fortune* (H.B.2173), s d Broxbourne Adveral (H.B.1947). (Last kid 12th March, 1925).

The Prizes awarded at this Show were also included in the awards for the British Goat Society's " Breeder's " Perpetual Challenge Cup and " Stud Goat " Challenge Cup.

PIGS.

BERKSHIRE.

(£9 towards the Prizes in these Classes were given by the British Berkshire Society, and ages are calculated to May 28, 1925.

Class 189.—*Berkshire Boar, exceeding* 18 *months old.* [4 entries.]

I. (£10.)—T. L. Martin, Ashe Warren House, Overton, Hants., **Suddon Monty** (B.337), born 20th March, 1922, bred by J. Fricker, Marsh Farm, Stalbridge, Dorset; s Heale War Lunn (24172), d Princess Royal 5th (19695), s d Motcombe Cognac (16605).

II. (£5.)—J. D. Player, Lenton, Nottingham, **Leadenham Duke.** born 15th January, 1923, bred by Capt. J. S. Reeve, Leadenham House, Lincoln; s Pamber Paragon, d Leadenham Turvey V, s d Manor Robert.

III. (£2.)—J. T. Eason, Woodhouse Farm, Imannel, Andover, Hants., **Woodhouse Boniface** (B.1013), born 28th July, 1923: s Dunmanor Acme (B.429), d Dunmanor Agnes III (S.25484), s d Gwerne Nonsuch (B.23375).

R.—W. Slough, Oakdene, Byng Road, Barnet, Herts., **Oakdene Onward 1st** (B.1191), born 4th April, 1923; s Basildon Onward (24553), d Glendon Speculation (25571), s d Herriard Maze (21858).

Class 190.—*Berkshire Boar, not exceeding* 18 *months old.* [5 entries.]

I. (£7.)—Mrs. C. S. Oliver, Whitmore Lodge, Sunninghill, Berks., **Harroden Prince** (B.1260), born 28th January, 1924, bred by A. Masters, Hill-top Farm, Little Harrowden; s Manor Ming (B.300), d Coppice Ugand (S.2260), s d Hammond Hades (21941).

II. (£4.)—A. H. Thomas, Sycamores, Loose, Kent, **Hillfoot Punch** (B.1193), born 29th January, 1924, bred by G. W. Layley, Hillfoot Farm, Beenham, Berkshire; s Murrell Hottentot (B.B. B.588), d Murrell Britta (B.B. S.2538), s d Foxdown Admiral (B.60).

III. (£2.)—Lady FitzGerald, Buckland, Faringdon, Berks., **Buckland Bachelor** (B.1412), born 10th September, 1924: s Basildon Lion 1st (26109), d Buckland Bell 5th (25451), s d Links Vitrol (B.B.23521).

R.—F. Sykes, Richings Park, Colnbrook, Bucks., **Historian** (B.1218), born 8th March, 1924, bred by T. A. Edney Hayter, Whitchurch, Hants.; s Kingstone Pioneer (690), d Herriard Charity II (227), s d Iwerne Nonsuch (23375).

Class 191.—*Berkshire Breeding Sow, exceeding* 18 *months old.* [9 entries.]

I. (£10.)—Major J. A. Morrison, D.S.O., Basildon Park, Goring, Reading, Berks., **Bungay's Myrol** (S.3656), born 6th January, 1923, bred by M. J. Day, Bungay's, Stalbridge, Dorset; s Bungay's Sharper (B.251), d Braishfield Pride (S.996), s d Whitley Royal Standard (20558).

II. (£5.)—T. L. Martin, Ashe Warren, Overton, Hants, **Sudden Flapper** (1891), born 10th July, 1922, bred by J. Fricker, Marsh Farm, Stalbridge, Dorset; s Heale War Lunn (24172), d Manor Marcello (20005), s d Top Emerald (19850).

III. (**£2.**)—Hon. Mrs. BRUCE WARD, Godinton, Ashford, Kent, **Forest Daisy** (S.2051), born 20th August, 1922, bred by R. W. Carson, Lea Hall, Hatfield Heath, Harlow, Essex; s Forest John (B.507), d Forest Joyful (S.2052), s d Herriard Premier 2nd (21854).

R.—J. T. EASON, Woodhouse Farm, Imannel, Andover, Hants., **Mount Select** (S.2098), born 11th January, 1923, bred by G. R. Edney Hayter, Highbury, Whitchurch, Hants.; s Heale Nutmeg II (26448), d Herriard Select II (23098), s d Basildon Rogue (B.20720).

H.C.—F. SYKES, Richings Park, Colnbrook, Bucks., **Richings Beauty 1st** (3073), born 3rd January, 1923; s Heale Nutmeg II (26448), d Herriard Beauty 1st (238), s d Herriard Colonel.

CLASS 192.—*Berkshire Breeding Sow, not exceeding* 18 *months old.* [11 entries.]

I. (**£7.**)—T. L. MARTIN, Ashe Warren, Overton, Hants., **Ashe Minnie 1st** (S.4665), born 25th January, 1924; s Sudden Monty (B.337), d Blackmore Min (372), s d Sudwick Sam 1st (24246).

II. (**£4.**)—J. T. EASON, Woodhouse Farm, Imannel, Andover, Hants., **Woodhouse Miss Prim** (S.4740), born 12th May, 1924; s Herriard Columbus II (24873), d Mount Selection (S.2099), s d Heale Nutmeg II (26448).

III. (**£2.**)—F. SYKES, Richings Park, Colnbrook, Bucks., **Richings Beauty VI**, born 28th January, 1924; s Aberger King Alpha (B.285), d Herriard Beauty I (238), s d Herriard Colonel (22042).

R.—F. SYKES, **Richings Enchantress I** (5152), born 26th January, 1924; s Aberger King Alpha (285), d Whitley Haybag (542), s d Lucky John (20371).

H.C.—LADY FITZGERALD, Buckland, Faringdon, Berks., **Buckland Vixen**, (S.4789), born 1st January, 1924; s Basildon Lion 1st (26109), d Buckland Kaskmir (1410), s d Lord Kirkham (19989).—T. L. MARTIN, **Forest Lunn 16th** (S.4441), born 29th January, 1924, bred by R. V. Carson, Lee Hall, Marlow; s Tamber Gay Crusader (25740), d Forest Lunn (S.2034), s d Marston George (21484).—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., **Basildon Maid 8th**, born 9th January, 1924; s Murrell Mike (21239), d Sotwell Maid 2nd (23829), s d Sudden Lond (21740).

CHALLENGE CUPS (Value £10 10s. each).

GIVEN BY THE BRITISH BERKSHIRE PIG SOCIETY.

To be won twice in succession or three times in all before becoming the property of the Exhibitor.

A Silver Medal was awarded to the Breeder of the prize-winning Animal.

Best Boar in Classes 189 *or* 190.

PREVIOUS WINNERS.

1922. H. R. Beeton.
1923. J. Nagle.
1924. W. A. Bindley.

I.—T. L. MARTIN, Ashe Warren House, Overton, Hants., **Sudden Monty** (B.337), born 20th March, 1922, bred by J. Fricker, Marsh Farm, Stalbridge, Dorset; s Heale War Lunn (24172), d Princess Royal 5th (19695), s d Motcombe Cognac (16605).

R.—J. D. PLAYER, Lenton, Nottingham, **Leadenham Duke,** born 15th January, 1923, bred by Capt. J. S. Reeve, Leadenham House, Lincoln: s Pamber Paragon, d Leadenham Turvey V, s d Manor Robert.

Best Sow in Classes 191 *or* 192.

PREVIOUS WINNERS.

1922. J. Nagle.
1923. H. C. Sutton.
1924. F. Sykes.

I.—T. L. MARTIN, Ashe Warren, Overton, Hants., **Ashe Minnie 1st** (S.4665), born 25th January, 1924; s Sudden Monty (B.337), d Blackmore Mim (372), s d Sudwick Sam 1st (24246).

R.—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., **Bungay's Myral** (S.3656), born 6th January, 1923, bred by M. J. Day, Bungay's, Stalbridge, Dorset; s Bungay's Sharper (B.251), d Braishfield Pride (S.996), s d Whitley Royal Standard (20558).

LARGE BLACK.

(£40 towards the Prizes in these Classes and the Champion Prizes were given by the Large Black Pig Society.)

CLASS 193.—*Large Black Boar, farrowed before May* 1, 1924. [12 entries.]

I. (£10.)—W. WOOLLAND, Baydon Manor, Ramsbury, Wilts., **Valley General 2nd,** born 28th February, 1922, bred by J. C. Olver, Ladock, Cornwall; s Valley Result, d Trevisquite Victory 14th, s d Restronquent Pioneer.

II. (£5.)—H. J. WATSON, Hermongers, Rudgwick, Sussex, **Hermongers Good Boy 2nd** (26155), born 9th February, 1923; s Drayton Champion Lad 1st (16447), d Hermongers Lass 4th (69874), s d Moorland Pride (7751).

III. (£2.)—W. J. WARREN, Deacon's Farm, Staplegrove, Taunton, **Kibbear Royal Willie** (25777), born 9th September, 1922; s Vahan Jack 5th (13845), d Kibbear Lady Hilda 1st (58232), s d Bassingbourn Squire (9053).

R.—Lt.-Col. A. DELME-RADCLIFFE, D.S.O. (I.A.Ret'd.), Shenley House, Headcorn, Kent, **Dargate Harold 1st** (25069), born 11th June, 1922, bred by Mr. Gaskain, Dargate, Faversham; s Clitheral Harold (18513), d Ambo Aromatic (70614), s d Trevisquite Lord of the Manor (13045).

V.H.C.—W. L. HOSKING & SONS, Fentongollan, Probus, Cornwall, **Fentongollan Result VI,** born 1st July, 1923; s Fentongollan Victor II (21428), d Fentongollan Smiling Lady IV (89140), s d Fentongollan Orion.

H.C.—W. D. ENGLISH, Chapter Farm, Rochester, **Watling Barbarian** (24867), born 27th April, 1922; s Westow Hengist 3rd (16055), d Witham Barbara 18th (55654), s d Witham Tiptree 4th (12809).

C.—E. W. EDWARDS, Pednor House, Chesham, Bucks., **Pednor Royal 1st** (29387), born 12th August, 1923; s Vahan Royal 3rd (18801), d Cornwood Czarina (43006), s d Fentongollan Naik (9455).

CLASS 194.—*Large Black Boar, not exceeding* 12 *months old on May* 1, 1925. [9 entries.]

I. (£10.)—W. L. HUBBLE, New House Farm, Headcorn, Kent, **Headcorn Chieftain 2nd** (A.1137), born 29th July, 1924; s Bellhurst Chieftain (26909), d Headcorn Choice 5th (14086), s d Bellhurst Cutler (14887).

II. (£5.)—W. L. HOSKING & SONS, Fentongollan, Probus, Cornwall, **Fentongollan Dux I** (A.1057), born 15th Auust, 1924; s Fentongollan Vassal (28659) d Fentongollan Magna Nigra (127098), s d Fentongollan Victor II (21425).

III. (£2.)—C. C. PYKE, O.B.E., Capel Leyse, Holmwood, Surrey, **Holmwood All Black** (A.1073), born 1st June, 1924; s Runtley King Victor (23705), d Hermongers Daphne 6th (92698), s d Drayton Champion Lad I (16447).

R.—W. D. ENGLISH, Chapter Farm, Rochester, **Dargate Dixie** (A.897), born 23rd May, 1924, bred by W. F. Gaskain, Dargate, Faversham; s Watling Dixie 2nd (27475), d Watling Senora 7th (118848), s d Drayton Success 2nd (21945).

CLASS 195.—*Large Black Boar, farrowed in* 1925. [10 entries.]

I. (£7.)—E. W. EDWARDS, Pednor House, Chesham, Bucks., **Pednor Democrat,** born 1st January; s Pednor Anchorite 10th (29313), d Northdene Best of All 14th (106878), s d Wilbraham Salary (10623).

II. (£4.)—W. D. ENGLISH, Chapter Farm, Rochester, **Watling Desmond 3rd,** born 1st January; s Watling Martian 4th, (27473), d Bardolph Desdemona (120654), s d Bixby Doonard (26763).

III. (£2.)—W. L. HUBBLE, New House Farm, Headcorn, Kent, **Headcorn Marvel 3rd** (B.13), born 3rd January; s Runtley Marvel 3rd (24737), d Headcorn Lily III (120840), s d Bellhurst Cutler (14887).

R.—W. D. ENGLISH, **Watling Square Law,** born 9th January; s Drayton Success 2nd (21945), d Watling Matchless 2nd, s d Westow Hengist 3rd (16055).

V.H.C.—W. F. GASKAIN, Dargate, Faversham, Kent, **Dargate Prince** (B.35), born 9th January; s Tillington Prince 3rd, (A.4114), born 4th July, 1924: s Pednor Hengist 1st (29359), d Docking Prudence (77414), s d Viveton Colonel (12497).

H.C.—W. D. ENGLISH, **Watling Abbot,** born 2nd January; s Drayton Success 2nd (21945), d Watling Senora (74674), s d Westow Hengist 2nd (16053).

C.—H. E. BENNETT, Hawkenbury, Staplehurst, Kent, **Ambo Roland 4th,** born 7th January; s Kingston Roland (26399), d Ambo Lady 3rd (117644), s d Trevisquite Lord of the Manor (13045).

CLASS 196.—*Large Black Breeding Sow, farrowed before May* 1, 1924. [15 entries.]

I. (£10.)—W. L. HUBBLE, New House Farm, Headcorn, Kent, **Berwyn Beauty 4th** (107204), born 31st March, 1923, bred by W. H. Judge; s Marsh General Botha (21779), d Dargate Senora 52nd (73818), s d Westow Hengist 2nd (16053).

II. (£5.)—H. E. BENNETT, Hawkenbury, Staplehurst, Kent, **Ambo Augusta** (70648), born 10th January, 1921; s Trevisquite Lord of the Manor (13045), d Ambo Ladybird (29918), s d Vahan Montague (7063).

III. (£2.)—W. J. WARREN, Deacon's Farm, Staplegrove, Taunton, **Haselbury Dinah** (114150), born 13th August, 1922, bred by Major Harrison, Haselbury, near Crewkerne, Somerset; s Kibbear Royal Prior 3rd (21363), d Tinten Belle (28126), s d Trivesquite Padstonian (7973).

R.—E. W. EDWARDS, Pednor House, Chesham, Bucks., **Pednor Prudence 1st** (117890), born 6th April, 1923; s Ashwell Anchorite 3rd (14417), d Docking Prudence (77414), s d Wiveton Colonel (12497).

V.H.C.—W. WOOLLAND, Baydon Manor, Ramsbury, Wilts., **Cornwood Heiress,** born 3rd March, 1922, bred by J. H. Glover, Cornwood; s Rialton Hero, d Cornwood Lass 58th, s d Fentongollan Naik.

H.C.—H. J. WATSON, Hermongers, Rudgwick, Sussex, **Treluckey Duchess 3rd** (81734), born 18th January, 1922, bred by T. F. James, Chantershier Farm, Norwood Hill, Horley; s Ridge Referee (13827), d Treluckey Princess 3rd (40876), s d Valley Traveller (7821).

CLASS 197.—*Large Black Breeding Sow, not exceeding* 12 *months old on May* 1. 1925. [15 entries.]

I. (£10.)—W. L. HUBBLE, New House Farm, Headcorn, **Headcorn Easy 7th** (A.3880), born 1st June, 1924; s Headcorn Boy Aster 1st (24539), d Headcorn Easy 2nd (89252), s d Bellhurst Idler (14893).

II. (£5.)—W. WOOLLAND, Baydon Manor, Ramsbury, Wilts., **Baydon Nightingale 8th,** born 13th May, 1924; s Baydon Rasper, d Clepstone Nightingale, s d Docking Laddie.

III. (£2.)—W. F. GASKAIN, Dargate, Faversham, Kent, **Dargate Sable 2nd,** (A.4102), born 6th June, 1924; s Eaglesfield Masterpiece (22993), d Bardolph Sable (120678), s d Stalham Thats Him (19741).

R.—W. F. GASKAIN, **Dargate Sable 1st** (A.4100), born 6th June, 1924; s Eaglesfield Masterpiece (22993), d Bardolph Sable (20678), s d Stalham Thats Him (19741).

V.H.C.—E. W. EDWARDS, Pednor House, Chesham, Bucks., **Pednor Prudence 3rd** (A.4114), born 4th July, 1924; s Pednor Hengist 1st (29359), d Docking Prudence (77414), s d Wiveton Colonel (12497).

H.C.—H. E. BENNETT, Hawkenbury, Staplehurst, Kent, **Ambo Alpha 14th,** born 6th June, 1924; s Kingston Roland (26399), d Ambo Alpha 3rd (117698) s d Eaglesfield Acquisition (22997).

C.—C. C. PYKE, O.B.E., Capel Leyse, Holmwood, Surrey, **Holmwood Daphne 1st** (A.4018), born 1st June, 1924; s Runtley King Victor (23705, d Hermongers Daphne 6th (92698), s d Drayton Champion Lad 1st (16447).

CLASS 198.—*Pair of Large Black Breeding Sows, farrowed in* 1925. [7 entries.]

I. (£7.)—E. W. EDWARDS. Pednor House, Chesham, Bucks., **Pednor Best of All 1st and 2nd,** born 1st January; s Pednor Anchorite 10th (29313), d Northdene Best of All 14th (106878), s d Wilbraham Salary (10623).

II. (£4.)—W. L. HUBBLE, New House Farm, Headcorn, **Headcorn Lily 8th and 9th** (B.18 and B.20), born 3rd January; s Runtley Marvel 3rd (24737), d Headcorn Lily 3rd (120840), s d Bellhurst Cutler (14887).

III. (£2.)—W. D. ENGLISH, Chapter Farm, Rochester, **Watling Debutante 1st and 2nd** (B.32 and B.34), born 1st January ; s Watling Marathon 4th (27473), d Bardolph Desdemona (120654), s d Bywell Arab (12259).

R.—W. F. GASKAIN, Dargate, Faversham, Kent, **Dargate Senorita 1st and 2nd** (B.40 and B.42), born 9th January ; s Tillington Prince 3rd (30769), d Watling Senora 7th (118848), s d Drayton Success 2nd (21945).

V.H.C.—W. D. ENGLISH, **Watling Matchless 6th and 7th,** born 9th January ; s Drayton Success 2nd (21945), d Watling Matchless 2nd (102122), s d Westow Hengist 3rd (16055).

CHAMPION PRIZES.

Best Animal in Classes 193 *to* 195.

I. (Silver Medal.)—W. WOOLLAND, Baydon Manor, Ramsbury, Wilts., **Valley General 2nd,** born 28th February, 1922, bred by J. C. Olver, Ladock, Cornwall ; s Valley Result, d Trevisquite Victory 14th, s d Restronquent Pioneer.

R.—W. L. HUBBLE, New House Farm, Headcorn, Kent, **Headcorn Chieftain 2nd** (A.1137), born 29th July, 1924 ; s Bellhurst Chieftain (26909), d Headcorn Choice 5th (14086), s d Bellhurst Cutler (14887).

Best Animal in Classes 196 *to* 198.

I. (Silver Medal.)—W. L. HUBBLE, New House Farm, Headcorn, Kent, **Berwyn Beauty 4th** (107204), born 31st March, 1923, bred by W. H. Judge : s Marsh General Botha (21779), d Dargate Senora 52nd (73818), s d Westow Hengist 2nd (16053).

R.—W. L. HUBBLE, **Headcorn Easy 7th** (A.3880), born 1st June, 1924 : s Headcorn Boy Aster 1st (24539), d Headcorn Easy 2nd (89252), s d Bellhurst Idler (14893).

LARGE WHITE.

(£10 towards the Prizes in these Classes and the Champion Prize were given by the National Pig Breeders' Association.)

CLASS 199.—*Large White Boar, farrowed before* 1925. [5 entries.]

I. (£10.)—W. WHITE & SONS, Pool Farm, Taunton, Somerset, **Caldmore Gay** (36575), born 4th July, 1921, bred by R. P. Haynes, Delves Green Farm, Wednesbury, Staffs. ; s Worsley Gay (27627), d Bottesford Buttercup 16th (52656), s d Worsley Turk 59th (22971).

II. (£5.)—Messrs. AGRAR, LTD., Wallington Manor, Baldock, Herts., **Taunton Emperor 2nd** (37751), born 2nd January, 1922, bred by W. White & Sons, Pool Farms, Taunton ; s Taunton Emperor (34227), d Taunton Amy 5th (81428), s d Histon Snowman (24047).

III. (£2.)—J. PIERPONT MORGAN, Wall Hall, Aldenham, Watford, **Turk of Aldenham** (37811), born 5th March, 1922, bred by Essex County Council ; s Turk of Bottesford (27417), d Boxted Ada (65052).

R.—W. L. HUBBLE, Cratloe, Faversham, **Premier of Blean** (Vol. 41), born 14th January, 1923, bred by J. Pierpont Morgan, Aldenham, Herts. ; s Aldenham Bright Boy (Vol. 39), d Aldenham Belle 3rd (88248), s d Wonder of Watford.

H.C.—C. HARDY, Odsal House, Harbledown, Canterbury, **Chilham Boy,** born 7th March, 1924 ; s Histon Wonder, d Amethyst of Chilham, s d Spalding Banner 7th.

CLASS 200.—*Large White Boar, farrowed in* 1925. [4 entries.]

I. (£7.)—W. WHITE & SONS, Pool Farm, Taunton, Somerset, **Taunton Gay 38th,** born 1st January; s Caldmore Gay (36375), d Taunton Amy 11th (93086), s d Taunton Araby 3rd (27325).

II. (£4.) W. L. HUBBLE, Cratloe, Faversham, born 5th January; s Premier of Blean (Vol. 41), d Bushes Lily 18th, s d Bourne King John 22nd.

III. (£2.) AGRAR, LTD., Wallington Manor, Baldock, Herts., **Eligible,** born 12th January; s Wallington Achilles II (37857), d Bourne Lady 2nd (88932), s d Bourne Bar None 125th (28835).

R. MORGAN & WINTERSON, Atterton, Pershore, Worcestershire, **Atterton Banner** (Ear. No. 744), born 7th January; s Caldmore Walcote Banner (36585), d Whittingham Kathleen 5th (Vol. 41), s d Caldmore Kitchener 7th (29095).

CLASS 201.—*Large White Breeding Sow, farrowed before* 1925. [7 entries.]

I. (£10.)—W. WHITE & SONS, Pool Farm, Taunton, Somerset, **Taunton Amy** (81422), born 2nd July, 1920; s Histon Snowman (24047), d Histon Amy 6th (59812), s d Histon Lion Heart (22481).

II. (£5.)—J. PIERPONT MORGAN, Wall Hall, Aldenham, Watford, **Cantab Maid Matilda** (89286), born January 5th, 1921, bred by Cambridge University Department of Agriculture; s Bourne Cantab (26069), d Cantab May Maid (52892).

III. (£2.)—AGRAR, LTD., Wallington Manor, Baldock, Herts., **Brocade 122nd** (888B.B.), born 14th July, 1921, bred by E. Wherry, Bourne, Lincs.; s Baron of Bourne (28633), d Bourne Brocade 62nd (58138), s d Bourne Bar None (20874).

R.- W. L. HUBBLE, Cratloe, Faversham, **Duston Queen Mary 5th** (104812) born 24th January, 1923, bred by C. W. King & Co., Ltd., Northampton; s Bourne Baron 3rd (33059), d Spalding Queen Mary 15th (81100), s d Kingmaker (24151).

H.C.—C. HARDY, Odsal House, Harbledown, Canterbury, **Chilham Betsy** born 6th March, 1924; s Histon Wonder, d Agatha of Chilham, s d Spalding Banner 7th.

C.—C. HARDY, **Chilham Bess,** born 6th March, 1924; s Histon Wonder, d Agatha of Chilham, s d Spalding Banner 7th.

CLASS 202.—*Pair of Large White Breeding Sows, farrowed in* 1925. [4 entries.]

I. (£1.)—MORGAN & WINTERSON, Atterton, Pershore, **Atterton Imogen 1st and 2nd** (Ear No. 750 and 751), born 7th January; s Caldmore Walcote Banner (36585), d Whittingham Kathleen 5th (Vol. 41), s d Caldmore Kitchener 7th (29095).

II. (£4.)—W. WHITE & SONS, Pool Farm, Taunton, Somerset, **Taunton Amy's 87th and 88th** (Vol. 42), born 1st January; s Caldmore Gay (36575), d Taunton Amy 11th (93086), s d Taunton Araby 3rd (27325).

III. (£2.)—W. L. HUBBLE, Cratloe, Faversham, born 5th January; s Premier of Blean (Vol. 41), d Bushes Lily 18th, s d Bourne King John 22nd

R.—AGRAR, LTD., Wallington Manor, Baldock, Herts., born 6th January; s Wallington Achilles II (37857), d Bourne Lady 2nd (88932), s d Bourne Bar None 125th (28835).

CHAMPION PRIZES.

A Gold Medal or £5 for the Best Animal in Classes 199 *to* 202.

I.—W. WHITE & SONS, Pool Farm, Taunton, Somerset, **Taunton Amy** (81422), born 2nd July, 1920; s Histon Snowman (24047), d Histon Amy 6th (59812), s d Histon Lion Heart (22481).

R.—J. PIERPONT MORGAN, Wall Hall, Aldenham, Watford, **Cantab Maid Matilda** (89286), born January 5th, 1921, bred by Cambridge University Department of Agriculture; s Bourne Cantab (26069), d Cantab May Maid (52892).

MIDDLE WHITE.

(£15 towards the Prizes in these Classes and the Champion Prizes were given by the National Pig Breeders' Association.)

CLASS 203.—*Middle White Boar, farrowed before* 1925. [17 entries.]

I. (£10.)—W. R. PARTRIDGE, The Manor House, Woodmancote, Cirencester, **Hicton Proud Boy** (35163), born 8th April, 1920, bred by J. Chivers, Histon, Cambridge; s Histon Wanderer 25349), d Histon Pride (48418), s d Shrewsbury (19511).

II. (£5.)—A. LENEY, Salts Place, Loose, Kent, **Ayle Woodman 3rd** (43159), (Ear No. 84), born 1st March, 1923, bred by Industrial Settlements, Incorporated, Preston Hall, Aylesford, Kent; s Norsbury Woodman (35461), d Biddenden Beatrice 6th (82508), s d Keston Victor of Biddenden (28129).

III. (£2.)—Mrs. M. C. COWAN, Boldrewood, Lenham, Kent, **Edenbridge David 11th**, born 2nd January, 1924, bred by G. V. Manwaring, Crouch Houe Farm, Edenbridge, Kent; s Wharfedale Jamieson 3rd (28341), d Edenbridge Carnation (83468), s d Edenbridge Bonnie Boy (31519).

R.—Drs. R. & P. LANGDON DOWN, Normansfield, Teddington, Middlesex, **Sunstar of Normansfield** (45889 Vol. 40), born 29th March, 1923, bred by Messrs. Bishop & Measures, The Pendley Stock Farms, Tring; s Hawthorn Sultan (38741), d Pendley Perfection 12th (86460), s d Pendley Peer (32181).

V.H.C.—Commander and Mrs. BOULNOIS, The Navy Pig Farm, Yateley, Hampshire, born 5th July, 1924; s Salopian of Prestwood (32315), d Beenham Halfa III (71820), s d Hope of Hamonds (25361).

C.—W. R. PARTRIDGE, **Histon Pugilist**, born 7th July, 1923, bred by Chivers & Sons, Histon, Cambridge; s Southmore Pugilist (39483), d Histon Rosadora 8th (84694, s d Histon Wanderer (25349).—VISITING COMMITTEE, City of London Mental Hospital, Stone, Dartford, Kent, **Wattle Rover**, born 5th October, 1923, bred by Halsted Pig Farms, Ltd., Halstead, Kent; s Histon Rover 34th, d Godmersham Adamint, s d Histon Shrewsbury 15th.

CLASS 204.—*Middle White Boar, farrowed in* 1925. [20 entries.]

I. (£7.)—J. M. BAINBRIDGE, Great Chilmington, Great Chart, Kent, born 2nd January; s Godinton Ambassador (44171), d Chilmington Sophia 3rd (113284), s d Preene of Chilmington (35531).

II. (**£4.**)—VISITING COMMITTEE, City of London Mental Hospital, Stone, Dartford, Kent, born 3rd January; s Edenbridge Watchman 3rd, d Dartford Joan 4th.

III. (**£2.**)—Major PIGOTT AND PARTNERS, Hill Place Farm, Knaphill, Surrey, **Burningford Resolute,** born 2nd January; s Southmore Resolute, d Fanhams Welcome, s d Hermes of Sandwich.

R.—MORGAN & WINTERSON, Atterton, Pershore, **Atterton Hivite** (Ear No. 736), born 10th January; s Hivite of Norsbury (Vol. 41), d Norsbury Carnation (Vol. 41), s d Norsbury Vaughan (39201).

V.H.C.—Major G. KELSEY BURGE, Hengrove, Margate, Kent, **Thanetonian Millbank,** born 2nd January; s Mistley Millrace (45383), d Oxney Pride 10th (121382), s d Oxney Revel (35505).

C.—S. BIDE & SONS, LTD., Pedigree Pig Farm, Farnham, Surrey, born 4th January; s Wharncliffe Master (46847), d Atbara of Compton (11218), s d Prestwood Royalist (32217).—Mrs. E. JEWELL, Ide Hill, Sevenoaks, Kent (Ear No. 458), born 15th January; s Sundon Music Hall 2nd (46567), d Chengin Victoria 6th (11348), s d Histon Shrewsbury 9th (35179).—VISCOUNT LEWISHAM and Major W. LL. PALMER, M.C., Godmersham Park, near Canterbury, born 1st January; s Apollo of Wharfedale (43133), d Haine Empress 3rd (116276), s d Peene of Haine (35533).

CLASS 205.—*Middle White Breeding Sow, farrowed before* 1924. [23 entries.]

I. (**£10.**)—R. A. S. MITCHISON, Pullington, Benenden, Kent, **Pullington Pamela,** born 1st January, 1923; s Sunhill Snell, d Howden Patricia, s d Sundon M.E.E.

II. (**£5.**)—A. LENEY, Salts Place, Loose, Kent, **Salts Helah** (123408, Ear No. 14), born 21st July, 1923; s Ajax of Wharfedale (43039), d Wharfedale Helah (101474), s d Wharfedale Deliverance (32575).

III. (**£2.**)—W. WOOLLAND, Baydon Manor, Ramsbury, Wilts., **Hazel Daisy,** born 11th September, 1920, bred by - - Hamer, Bromley Cross, Lancs.; s Peene Gunner, d Wharfedale Romance, s d Wharfedale Irresistible.

R.—Commander and Mrs. BOULNOIS, The Navy Pig Farm, Yateley, Hampshire, **Yateley Nymph,** born 25th February, 1923; s Hammonds Hivite (31661), d Nymph of Yateley (86000), s d Bonny Boy of Bookham (27853).

V.H.C.—P. C. TURNER, Day's Farm, Wilmington, Dartford, Kent, **Ayle Flapper 8th** (111352), born 19th March, 1923, bred by The Industrial Settlements (Inc.), Preston Hall, Aylesford, Kent; s Kenil Oarsman (35279), d Peene Flapper 6th (99442), s d Mick of Peene (32063).

C.—J. M. BAINBRIDGE, Great Chilmington, Great Chart, Kent, **Chilmington Sophia 3rd** (113284), born 5th March, 1923; s Preene of Chilmington (35531), d Chilmington Sapphire 1st (72250), s d Edenbridge Victor (28003).—J. H. HOLLAND, Peene House, Newington, Folkestone, **Elegance of Peene** (114842), born 17th April, 1922, bred by F. W. Napper, Elham; s Kiston Gerald (35315), d Peene Graceful 2nd (74478), s d Peene Shrewsbury (28213).—Mrs. E. JEWELL, Henden Manor, Ide Hill, Sevenoaks, Kent, **Ledens Ruby 2nd** (119168), born 9th January, 1923, bred by A. H. Barnard, Leydens, Edenbridge, Kent; s Major of Compton (39081), d Compton Rosemary 4th (95310); s d Hugo of Compton (55247).—VISCOUNT LEWISHAM and Major W. Ll.

Palmer, M.C., Godmersham Park, near Canterbury, **Godmersham Glory** (321, 115622), born 15th January, 1923; s Prestwood Acrobat 1st (23197) d Oxney Glory 5th (86246), s d Wharfedale Revel (25661).

Class 206.—*Middle White Breeding Sow, farrowed in* 1924. [24 entries.]

I. (**£7.**)—A. Leney, Salts Place, Loose, Kent, **Salts Choice 2nd** (Ear No. 22, Vol. 41), born 17th January, 1924; s Wharncliffe Prince (32625), d Oxney Choice 5th (121344), s d Oxney Revel (35505).

II. (**£4.**)—A. Leney, **Salts Helah 2nd** (Ear No. 36, Vol. 41), born 19th March, 1924; s Wharfedale Ranus (35915), d Wharfedale Helah (101474), s d Wharfedale Deliverance (32575).

III. (**£2.**)—Major G. Kelsey Burge, Hengrove, Margate, Kent, **Thanetonian Fatima 3rd** (Vol. 42), born 4th January, 1924; s Mistley Millstone (54387), d Fatima of Mistley (114960), s d Mistley Tom (35451).

R.—Lord Glanely, Lackham, Lacock, Wilts., **Lackham Rosadora,** born 1st January, 1924; s Norsbury Vaughan (89201), d Rosadora of Norsbury (123184), s d Histon Rover (28075).

V.H.C.—W. R. Partridge, The Manor House, Woodmancote, Cirencester, **Southmore Petunia 11th** (Vol. 42), born 6th January, 1924; s Southmore Resolute (39485), d Southmore Hopeful 4th (87380), s d Fordmanor Robert (31583).

C.—R. A. V. Brearey, Little Filborough Farm, Chalk, Kent, born 20th May, 1924; s Viscount of Filborough 11th (46713), d Albany Buttercup 9th (94046), s d Albany Whitehall 10th (31147).—Viscount Lewisham and Major W. Ll. Palmer, M.C., Godmersham Park, near Canterbury, **Godmersham Holly 7th** (714, Vol. 41), born 10th February, 1924; s Apollo of Wharfdale (43133), d Histon Lady Holly 5th (97288), s d Histon Woodman (28099). — Major Pigott and Partners, Hill Place Farm, Knaphill, **Hallastone Mona 4th,** born 1st January, 1924, bred by W. Hallas, Bank House Farm, Helsby; s Candidate of Hallastone, d Chequer Mona, s d Histon Shrewsbury 9th. — P. Charles Turner, Day's Farm, Wilmington, Dartford, Kent, **Ayle Venice** (298, Vol. 41), born 7th January, 1924, bred by the Industrial Settlements (Inc.), Preston Hall, Aylesford, Kent; s Prestwood Peter Pan 2nd (45967), d Norsbury Venice 2nd (120914), s d Histon Wanderer 3rd (35191).—Mrs. Sofer Whitburn, Amport, Andover, Hants., **Amport Mongolia,** born 3rd July, 1924; s Scotty of Norsbury (46323), d Yateley Medina (127256), s d Norsbury Valour (32099).

Class 207.—*Pair of Middle White Breeding Sows, farrowed in* 1925. [20 entries.]

I. (**£7.**)—Viscount Lewisham and Major W. Ll. Palmer, M.C., Godmersham Park, near Canterbury, born 1st January; s Apollo of Wharfedale (43133), d Histon Lady Holly 5th (97288), s d Histon Woodman (28099).

II. (**£4.**)—S. Bide & Sons, Ltd., Pedigree Pig Farm, Farnham, Surrey, born 4th January; s Wharncliffe Master (46847), d Atbara of Compton (11218), s d Prestwood Royalist (32217).

III. (**£2.**)—Mrs. Sofer Whitburn, Amport, Andover, Hants., born 11th January; s Histon Rover 50th (44585), d Amport Peerless 3rd (133090), s d Scotty of Norsbury (46323).

R.—Lt.-Col. H. SPENDER-CLAY, M.P., Ford Manor, Lingfield, Surrey (Ear Nos. 575 and 577), born 6th January; s Histon Millpond (35161), d Wharfedale Impression (75910), s d Preserver of Wharfedale (25493).

V.H.C.—MORGAN & WINTERSON, Abberton, Pershore, **Abbeton Carnation 1st and 2nd** (Ear No. 742 and 743), born 10th January; s Hivite of Norsbury (Vol. 41), d Norsbury Carnation (716, Vol. 41), s d Norsbury Vaughan (39201).

C.—J. M. BAINBRIDGE, Great Chilmington, Great Chart, Kent, born 2nd January; s Godinton Ambassador (44171), d Chilmington Sophia 3rd (113284), s d Preene of Chilmington (35531).—LORD GLANELY, Lackham, Wilts. (Ear Nos. 382 and 387), born 6th January; s Histon Rover 38th (44561), d Norsbury Hansom (120888), s d Norsbury Hero (32093).

CHAMPION PRIZES.

A Gold Medal or £5 for the Best Animal in Class 203 *or* 204.

I.—W. R. PARTRIDGE, The Manor House, Woodmancote, Cirencester, **Hicton Proud Boy** (35163), born 8th April, 1920, bred by J. Chivers, Histon, Cambridge; s Histon Wanderer (25349), d Histon Pride (48148), s d Shrewsbury (19511).

R.—A. LENEY, Salts Place, Loose, Kent, **Ayle Woodman 3rd** (43159, Ear No. 84), born 1st March, 1923, bred by Industrial Settlements, Incorporated, Preston Hall, Aylesford, Kent; s Norsbury Woodman (35461), d Biddenden Beatrice 6th (82508), s d Keston Victor of Biddenden (28129).

A Gold Medal or £5 for the Best Animal in Classes 205 *to* 207.

I.—A. LENEY, Salts Place, Loose, Kent, **Salts Choice 2nd** (Ear No. 22, Vol. 41), born 17th January, 1924; s Wharncliffe Prince (32625), d Oxney Choice 5th (121344), s d Oxney Revel (35505).

R.—R. A. S. MITCHISON, Pullington, Benenden, Kent, **Pullington Pamela,** born 2st January, 1293: s Sunhill Snell, d Howden Patricia, s d Sundon M.E.E.

TAMWORTH

(£10 towards the Prizes in these Classes and the Champion Prize were given by the National Pig Breeders' Association.

CLASS 208.—*Tamworth Boar, any age.* [3 entries.]

I. (£10.)—T. A. STEPHENS, Frensham Manor, Farnham, Surrey, **Newburie Cayenne** (165), born 17th June, 1924, bred by Capt. R. A. Angier, New Mousefield, Newbury, Berks.; s Knowle Bruce (36013), d Knowle Venus (76210), s d Basildon Max (25683).

II. (£5.)—J. A. H. STANSFIELD, Bates, Wittersham, Kent, **Oxney Nomen,** born 15th May, 1924; s Knowle Nomen (47145), d Knowle Maria (127416), s d Knowle Joseph 2nd (39827).

III. (£2.)—J. A. H. STANSFIELD, **Enterprise of Oxney,** born 3rd January, 1924, bred by B. J. Philip, Coleshill, Birmingham; s Firaway of Whitacre, d Whitacre Countess 26th (102132), s d Roamer of Whitacre (39855).

CLASS 209.—*Tamworth Breeding Sow, farrowed before* 1925. [7 entries.]

I. (£10.)—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., **Knowle Favor** (88094), born 6th January, 1921, bred by R. Ibbotson, The Hawthorns, Knowle, Warwickshire: s Knowle Dreadnought (28419) d Knowle Fashion, s d Knowle Arundel (21855).

II. (£5.)—T. A. STEPHENS, Frensham Manor, Farnham, Surrey, **Knoll Felicity** (127406), born 10th October, 1922, bred by R. Ibbotson, Knowle Hall, Dorridge, Warwickshire ; s Knowle Redstar (32713), d Knowle Favourite 2nd (76160), s d Basildon Max (25683).

III. (£2.)—Major J. A. MORRISON, D.S.O., **Basildon Barbara**, born 2nd January, 1922 ; s Knowle Darlington (32687), d Beauty of Milton (76090), s d Mono of Middleton (25775).

R.—T. A. STEPHENS, **Knowle Virtue** (127440), born 15th September, 1922, bred by R. Ibbotson, Knowle Hall, Dorridge, Warwickshire ; s Knowle Bruce (36013), d Knowle Vesta (88134), s d Knowle Bedford (32669).

H.C.—J. A. H. STANSFIELD, Bates, Wittersham, Kent, **Oxney Golden Queen**, born 27th April, 1924 ; s Knowle Newcastle (41743), d Queen of Basildon (76252), s d Whitacre Firaway (25821).

C.—J. A. H. STANSFIELD, **Knowle Maria** (127416), born 6th March, 1923, bred by the late R. Ibbotson, Knowle, Warwickshire : s Knowle Joseph 2nd (39827), d Knowle Queen Mary (88118), s d Knowle Dreadnought (28419).

CLASS 210.—*Pair of Tamworth Breeding Sows, farrowed in* 1925. [2 entries.]

I. (£7.)—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., born 29th January ; s Milton Bishop 2nd (36041), d Basildon Marigold, s d Knowle Newcastle (47143).

CHAMPION PRIZE.

A Gold Medal or £5 for the best animal in Classes 208 *to* 210.

I.—Major J. A. MORRISON, D.S.O., Basildon Park, Goring, Reading, Berks., **Knowle Favor** (88094), born 6th Janaury, 1921, bred by R. Ibbotson, The Hawthorns, Knowle, Warwickshire ; s Knowle Dreadnought (28419), d Knowle Fashion, s d Knowle Arundel (21855).

R.—T. A. STEPHENS, Frensham Manor, Farnham, Surrey, **Newburie Cayenne** (165), born 17th June, 1924, bred by Capt. R. A. Angier, New Mousefield, Newbury, Berks. ;. s Knowle Bruce (36013), d Knowle Venus (76210), s d Basildon Max (25683).

GLOUCESTERSHIRE OLD SPOTS.

(£20 towards the Prizes in these Classes were given by the Gloucestershire Old Spots Pig Society.).

CLASS 211.—*Gloucestershire Old Spots Boar, farrowed before* 1925. [5 entries.]

I. (£10.)—J. D. BEAK, Maiden Bradley, Bath, **Maiden Bradley General 2nd,** born 27th February, 1923; s Ashton Dapper (4627), d Dinedor Barmaid (8390), s d Clerchill Actor (664).

II. (£5.)—BENNETT & HOWARD, Quarry Farm, Thornbury, Glos., **Huntingford Dauntless** (5475), born 12th March, 1924, bred by F. G. Bell, Huntingford Charfield, Glos.; s Holmwood Dreadnought (4821), d Huntingford Josephine (16325), s d Ittells Major 2nd (2084).

III. (£2.)—SHERRIFF & SONS, Lemsford, Hatfield, Herts., **Nashes Premier 5th,** born 20th May, 1924; s Dorset Diver (4401), d Nashes Blossom 2nd (15518), s d Nashes Duke (3068).

R.—JOHN DOUGLAS, 142, Hanham Road, Kingswood, **Doynton Nobleman** (5486), bred by H. Lear, Doynton, Bristol; s Holmwood Lord (5241), d Doynton Mary (14262), s d Ashton Bloomer (1714).

CLASS 212.—*Gloucestershire Old Spots Boar, farrowed in* 1925. [4 entries.]

I. (£7.)—BENNETT & HOWARD, Quarry Farm, Thornbury, Glos., **Thornbury Baronet** (5514), born 28th January; s Eastcote Roger (5393), d Thornbury Bar-None (15783), s d Ashton Bloomer (1741).

II. (£4.)—SHERRIFF & SONS, Lemsford, Hatfield, Herts., **Nashes Duke 6th,** born 2nd January; s Nashes Premier 2nd (5423), d Nashes Duchess 12th (16229), s d Gilslake Soldier (3127).

III. (£2.)—J. D. BEAK, Maiden Bradley, Bath, **Maiden Bradley Tip Top 2nd,** born 2nd January; s Ashton Dapper (4627), d Maiden Bradley Barmaid 2nd (14641), s d Maiden Bradley Champion 1st (3858).

CLASS 213.—*Gloucestershire Old Spots Breeding Sow, farrowed before* 1924. [5 entries.]

I. (£10.)—BENNETT & HOWARD, Quarry Farm, Thornbury, Glos., **Thornbury Bar-None** (15683), born 24th July, 1922; s Ashton Bloomer (1741), d Thornbury Barmaid (7851), s d Gilslake Admiral (907).

II. (£5.)—J. D. BEAK, Maiden Bradley, Bath, **Maiden Bradley Maid 3rd** (17492), born 25th April, 1923; s Ashton Dapper (4627), s Maiden Bradley Barmaid (8390), s d Maiden Bradley Champion 1st (3858).

III. (£2.)—SHERRIFF & SONS, Lemsford, Hatfield, Herts., **Nashes Duchess 13th** (16230), born 8th August, 1922; s Huntingford Polemarsh (4210), d Nashes Duchess 1st (9036), s d Harlequin of Hollywood Towers (911).

H.C.—J. DOUGLAS, 142, Hanham Road, Kingswood, **Woodstock Nellie** (16576), born 7th August, 1922; s Ashton Conqueror (2560), d Woodstock Grace (10751), s d Ithells Hero (2078).

C.—R. T. LANGRIDGE, Mill Place, Yalding, Kent, **Cherry Queen** (15918), born 23rd March, 1922; s Shipway Prince 2nd (3652), d Winterbourne Cherry (4512), s d Colishill Bradley (240).

CLASS 214.—*Gloucestershire Old Spots Breeding Sow, farrowed in* 1924. [9 entries.]

I. (**£10.**)—J. D. BEAK, Maiden Bradley, Bath, **Maiden Bradley Maid 9th,** born 11th August; s Clapcote Madoc, d Maiden Bradley Maid 3rd (17492), s d Ashton Dapper (4627).

II. (**£5.**)—SHERRIFF & SONS, Lemsford, Hatfield, Herts., **Nashes Duchess 18th** (237), born 16th January: s Dorset Diver (4401), d Nashes Duchess 9th (16226), s d Gilslake Soldier (3127).

III. (**£2.**) -J. DOUGLAS, 142, Hanham Road, Kingswood, **Woodstock Phylis,** born 21st April; s Woodstock Jasper (4944), d Woodstock Milicent (16572), s d Woodstock Edwin (3338).

C.—J. D. BEAK, **Maiden Bradley Maid 13th,** born 8th April; s Ashton Dapper (4627), d Maiden Bradley Barmaid 3rd (14642), s d Maiden Bradley Champion 1st (3858).—R. T. LANGRIDGE, Mill Place, Yalding, Kent, **Teston Duchess** (X.369), born 2nd January, bred by Earl Leitrim, Court Lodge, Teston, Maidstone; s Westain Colonel (4222), d Teston Kismet (14702), s d Hodgecombe Hero (2016).

CLASS 215.—*Pair of Gloucestershire Old Spots Breeding Sows, farrowed in* 1925. [4 entries.]

I. (**£7.**)—SHERRIFF & SONS, Lemsford, Hatfield, Herts., **Nashes Duchess 26th and 27th,** born 2nd January; s Nashes Premier 2nd (5423), d Nashes Duchess 12th (16229), s d Gilslake Soldier (3127).

II. (**£4.**)—BENNETT & HOWARD, Quarry Farm, Thornbury, Glos., **Thornbury Baroness** (X.489) and **Thornbury Bargain** (X490), born 28th January; s Eastcote Roger (5393), d Thornbury Bar-none (15783), s d Ashton Bloomer (1741).

III. (**£2.**)—J. D. BEAK, Maiden Bradley, Bath, **Maiden Bradley Maid 14th and 15th,** born 2nd July; s Ashton Dapper (4627), d Maiden Bradley Barmaid 2nd (14641), s d Maiden Bradley Champion 1st (3858).

CHAMPION PRIZES.

GIVEN THROUGH THE GLOUCESTERSHIRE OLD SPOTS PIG SOCIETY.

The Sir George Watson Challenge Cup, value £21, *for the best Animal in Classes* 211 *to* 215. (*The Cup to be won three times by the same Exhibitor with different animals before becoming his own property.*)

PREVIOUS WINNERS.

1920. W. G. Williams.
1921. Sir J. Anderson, Bart.
1922. Ditto.
1923. Bennett and Howard.
1924. H. Matthews.

I.—J. D. BEAK, Maiden Bradley, Bath, **Maiden Bradley General 2nd,** born 27th February, 1923; s Ashton Dapper (4627), d Dinedor Barmaid (8390), s d Clerehill Actor (664).

The Deane-Drummond Cup, value £14 14*s. for the best Boar in Class* 211 *or* 212. (*The Cup to be won twice by the same Exhibitor with different animals before becoming his own property*).

PREVIOUS WINNERS.

1920. R. H. Hole.
1921. W. Frost.
1922. J. Douglas.
1923. F. H. Turnbull.
1924. Sir F. H. Bathurst, Bart.

I.—J. D. BEAK, Maiden Bradley, Bath, **Maiden Bradley General 2nd**, born 27th February, 1923; s Ashton Dapper (4627), d Dinedor Barmaid (8390), s d Clerehill Actor (664).

R.—BENNETT & HOWARD, Quarry Farm, Thornbury, Glos., **Huntingford Dauntless** (5475), born 12th March, 1924, bred by F. G. Bell, Huntingford, Charfield, Glos.; s Holmwood Dreadnought (4821), d Huntingford Josephine (16325), s d Ittells Major 2nd (2084).

The Sir John Anderson Challenge Cup for the best Sow in Classes 213 *to* 215. (*The Cup to be won twice by the same Exhibitor with different animals before becoming his own property*).

PREVIOUS WINNERS.

1923. Bennett and Howard.
1924. H. Matthews.

I.—BENNETT & HOWARD, Quarry Farm, Thornbury, Glos., **Thornbury Bar-none** (15683), born 24th July, 1922; s Ashton Bloomer (1741), d Thornbury Barmaid (7851), s d Gilslake Admiral (907).

WESSEX SADDLEBACK.

(£24 towards the Prizes in these Classes and the Special Prizes were given by the Wessex Saddleback Pig Society, and all pigs exhibited must have been entered or eligible for entry in that Society's Herd Book.)

CLASS 216.—*Wessex Saddleback Boar, farrowed before* 1925. [7 entries.]

I. (£10.)—T. L. MARTIN, Ashe Warren, Overton, Hants., **Ashe Plant 2nd** (650), born 29th January; s Ashe Plant (72), d Caer Girdle (438), s d Caer King Maker (9).

II. (£5.)—Dr. W. H. FORSHAW, Slythehurst, Ewhurst, Guildford, Surrey, **Slythehurst Bar-None** (2336), born 2nd January, 1924; s Norman King Offa (219), d Slythehurst Bracken (4938), s d Ashe Mac 2nd (680).

III. (£2.)—D. VICKERS, Temple Dinsley, Hitchen, Herts., **Oakley Prior** (1678) born 8th January, 1923, bred by Major Brewis, Polhampton, Overton, Hants.; s Ashe Major 1st (1219), d Oakley Prioress (4599), s d Norman Polham (661).

R.—Mrs. C. J. I. B. GORDON-CANNING, Sandilands, Sandwich Bay, Kent, **Ashe Nugget** (2576), born 4th June, 1924, bred by T. L. Martin, Ashe Warren, Hants. ; s Murrel Nut (1672), d Ashe Star 4th (9192), s d Ashe Planter (1383).

V.H.C.—Dr. W. H. FORSHAW, **Kingsland Charlie** (1812), born 20th February; 1923, bred by Captain J. M. Gordon-Hill, Kingsland, Hurstpierpoint, Sussex , s Balcombe Magpie (1047), d Horsted Fannie (4614), s d Spursholt Harry (95).

C.—Mrs. C. J. I. B. GORDON-CANNING, **Worth Marconi** (W.S.P.2205), born 23rd April, 1923 ; s Melchet Toby (692), d Melchet Laura 5th (2655), s d Cattistock Norman (6).

CLASS 217.—*Wessex Saddleback Boar, farrowed in* 1925. [4 entries.]

I. (£7.)—D. VICKERS, Temple Dinsley, Hitchen, Herts., **Preston Sphinx,** born 2nd January ; s Pipers Adrian (2243), d Offa Success 2nd (8408), s d Norman King Offa (219).

II. (£4.)—T. L. MARTIN, Ashe Warren, Overton, Hants., **Ashe Jake,** born 24th January ; s Ashe Plant 2nd (680), d Ashe Jem 10th (10496), s d Ashe Major (1219).

III. (£2.)—Mrs. E. TURNER, Shipton Oliffe Manor, Andoversford, Glos., **Oliffe Bauble** (2601), born 12th January ; s Royston David (2278), d Oliffe Blossom (4895), s d Norman Proctor (565).

R.—Dr. W. H. FORSHAW, Slythehurst, Ewhurst, Guildford, Surrey, **Slythehurst Barrister,** born 7th January ; s Slythehurst Bar-None (2336), d Echo of Slythehurst (9391), s d Slythehurst Forest King (1330).

CLASS 218. *Wessex Saddleback Breeding Sow, farrowed before* 1924. [6 entries.]

I. (£10.)—Mrs. A. SHERSTON, Otley Hall, Ipswich, Suffolk, **Ashe Nundy 5th,** (9116), born 20th January, 1923, bred by T. L. Martin, Ashe Warren, Overton, Hants. ; s Ashe Caruso (1379), d Ashe Nundy 3rd (5744), s d Ashe Plant 2nd (650).

II. (£5.)—Dr. W. H. FORSHAW, Slythehurst, Ewhurst, Guildford, Surrey, **Echo of Slythehurst** (9391), born 4th August, 1923, bred by A. S. Williams, Ewhurst, Surrey ; s Slythehurst Forest King (1330), d Godalming Eclipse (5283), s d Oakley Tuesley (618).

III. (£2.)—T. L. MARTIN, Ashe Warren, Overton, Hants, **Noreen of Northington** (3644), born 27th June, 1921 ; s Ashe Plant (72), d Norman Nectar (316), s d Norman Hero (27).

R.—Mrs. E. TURNER, Shipton Oliffe Manor, Andoversford, Glos., **Eastington Abbess** (5809), born 21st May, 1922, bred by Misses Donisthorpe and De Montgeon, Eastington Hall, Upton-on-Severn ; s Eastington Rowan (735), d Eastington Amazon (271).

CLASS 219. *Wessex Saddleback Breeding Sow, farrowed in* 1924. [7 entries.]

I. (£10.)—A. DUCKHAM, F.C.S., Rooks Hill, near Sevenoaks, Kent, **Rooks Hill Recitative** (11071), born 12th January ; s Royston Centaur (1662), d Coker Sceptic (5901), s d Pearash Lennox (730).

II. (£5.)—R. B. TAYLOR & SONS, Hendford Lodge, Yeovil, Somerset, **Sockhill Snow White 4th** (11336), born 17th January, 1924; s Eastington Rowan (735), d Sockhill Snow White (5828), s d Sockhill Pindarus (860).

III. (£2.)—D. VICKERS, Temple Dinsley, Hitchin, Herts., **Preston Dulcie 2nd** (11153), born 3rd January, 1924; s Royston Cicero (1530), d Offa Doreen (4845), s d Offa Edmund (471).

R. -Lt.-Col. E. C. M. PHILLIPS, D.S.O., Earshill House, Royston, Herts., **Royston Echo,** born 10th January; s Godalming Leader 1st, d Godalming Queen 4th (7499), s d Ashe Mac 2nd (680).

V.H.C.—T. L. MARTIN, Ashe Warren, Overton, Hants., **Ashe Noreen** (11674), born 28th January; s Ashe Major (1219), d Noreen of Northington (3644), s d Ashe Plant (72).

H.C.—Dr. W. H. FORSHAW, Slythehurst, Ewhurst, Guildford, Surrey, **Slythehurst Rosebud** (10880), born 8th February; s Slythehurst Robin Hood (1693), d Westland Rose, s d Slythehurst Merrie Andrew (1198).

CLASS 220.—*Pair of Wessex Saddleback Breeding Sows, farrowed in* 1925. [3 entries.]

I. (£7.)—D. VICKERS, Temple Dinsley, Hitchin, Herts., **Preston Clover 1st and Preston Clover 2nd,** born 6th January; s Pipers Adrian (2243), d Royston Clara (6680), s d Norman King Offa (219).

II. (£4.)—Mrs. E. TURNER, Shipton Oliffe Manor, Andoversford, **Oliffe Beauty** (12257) **and Oliffe Bangle** (12256), born 12th January; s Royston David (2278), d Oliffe Blossom (4895), s d Norman Proctor (565).

III. (£2.)—Dr. W. H. FORSHAW, Slythehurst, Ewhurst, Guildford, Surrey, **Sunbeam of Slythehurst and Susie of Slythehurst,** born 26th January, bred by R. V. Dickins, Grist Hill, Shamley Green, Guildford, Surrey; s Slythehurst Forest King (1330), d Sherfield Sister Sunbeam (1751), s d Cattistock Norman (6).

GOLD MEDAL.

Value £5 5s. for the best Pig exhibited in Classes 216 *to* 219, *and a Silver Medal to the Breeder who was not the Exhibitor of the Animal Winning the Gold Medal.*

I.—T. L. MARTIN, Ashe Warren, Overton, Hants., **Ashe Plant 2nd** (650), born 29th January; s Ashe Plant (72), d Caer Girdle (438), s d Caer King Maker (9).

R.—A. DUCKHAM, F.C.S., Rooks Hill, near Sevenoaks, Kent, **Rooks Hill Recitative** (11071), born 12th January; s Royston Centaur (1662), d Coker Sceptic (5901), s d Pearash Lennox (730).

LONG WHITE LOP-EARED.

(£20 towards the Prizes in these Classes were given by the Long White Lop-Eared Pig Society.)

CLASS 221.—*Long White Lop-Eared Boar, farrowed on or before October* 1, 1924. [7 entries.]

I. (£10.)—H. E. BENNETT, Hawkenbury, Staplehurst, Kent, **Netherton Erle King** (790), born 16th February, 1924, bred by S. Ward, ; s Aderton Consideration (244), d Netherton Emsie (593), s d Quither General (2).

II. (£5.)—A. PARTRIDGE, Mordref, Plympton, Devon, **Forda Marvel** (268), born 2nd November, 1922, bred by Capt. F. O. Wheeler, Forda House, Chillaton Lew Down ; s Forda Solomon (152), d Forda Miriam (405).

III. (£2.)—EARL DE LA WARR, Buckhurst Estate Office, Withyham, Sussex, **Priory Marvel** (574), born 12th October, 1923, bred by J. Partridge, Plympton ; s Forda Marvel (268), d Priory Lassie (823).

R.—A. HART, "Risingholme," Heathfield-Tower, Sussex, **Eversley of Heathfield**, born 31st August, 1924, bred by F. Bonnett, Edgecumbe, Sydney Road, Guildford ; s Yealmpston Right Sort, d Eversley Princess, s d Erme Commander (256).

H.C.—W. E. SMITH, jun., Wenhaston Hall, near Halesworth, Suffolk, **Wenhaston Shrewd Boy** (848), born 5th September, 1924 : s Capt. Wheeler's Boar, d Priory Amiable (2085), s d Forda Solomon (152).

CLASS 222.—*Long White Lop-Eared Boar, farrowed since October* 1, 1924. [4 entries.]

I. (£7.)—W. H. NEAL, Yealmpstone Farm, Plympton, **Yealmpstone Ben II**, born 25th January, 1925 ; s Netherton Earle King, d Yealmpstone Princess.

II. (£4.)—W. J. WESTLAKE, Godwell, Ivybridge, S. Devon, **Godwell Sensation**, born 20th December, 1924 ; s Ippleton Sultan (552), d Godwell Sunshine (1895).

III. (£2,)—EARL DE LA WARR, Withyham, **Buckhurst Topper**, born 15th January, 1925; s Priory Marvel (574), d Ipplepen Duchess (2025).

R.—W. E. SMITH, jun., Wenhaston Hall, near Halesworth, Suffolk, **Wenhaston Premier**, born 15th February, 1925 ; s Devonshire Someday (402), d Yealmpstone Qneen (71), s d Huxhams Boar.

CLASS 223.—*Long White Lop-Eared Sow, any age, in farrow, or with farrow, not exceeding* 8 *weeks old on* 1*st day of Show.* [8 entries.]

I. (£10.)—W. E. SMITH, jun., Wenhaston Hall, near Halesworth, Suffolk, **Yealmpstone Queen** (71), born 11th December, 1917, bred by W. H. Neal, Lower Yealmpstone, Plympton, Devon ; s Huxhams Boar.

II. (£5.)—W. H. NEAL, Yealmpstone Farm, Plympton, **Brook House Farm**, born 22nd July, 1921, bred by J. A. Dawn, Brook House ; s Roborough Jumbo, d Brook House Lassie.

III. (**£2.**)—EARL DE LA WARR, Withyham, **Ipplepen Duchess** (2025), born 12th August, 1923, bred by M. H. Moore, Newton Abbot; s Yealmpstone Panyan (148), d Ipplepen Pride (253).

R.—H. E. BENNETT, Hawkenbury, Staplehurst, Kent, **Yealmpstone Progress** (2679), born 21st December, 1923, bred by W. H. Neal; s Harberton Premier (86), d Yealmpstone Princess 4th (413), s d Quither General (2).

H.C.—CROSS, HALL & HALL, Nether Hall, Bradfield, Manningtree, Essex, **Bradfield Primula I** (3255), born 14th May, 1924; s Quither Peter (530), d Devonshire Primula (2163), s d Torlands Jumbo (54).—Lt.-Col. A. DELME-RADCLIFFE, D.S.O., Indian Army (Retired), Shenley House Farm, Headcorn, Kent, **Wizaller Snowflake 7th**, born 19th May, 1922, bred by N. J. Jackson, Wizaller, Modbury, Devon; s Netherton Subaltern, d Wizaller Snowflake, s d Wizaller Bacon Bill.—A. HART, "Risingholme," Heathfield-Tower, Sussex, **Heathfield Harberton** (Vol. 3), 2079), born 14th September, 1923; s Devonshire Snowman (398), d Harberton Blonde (795), s d Netherton Gay Boy (18).

CLASS 224.—*Long White Lop-Eared Sow, farrowed since March* 1, 1924 [13 entries.]

I. (**£7.**)—H. E. BENNETT, Hawkenbury, Staplehurst, Kent, **Godwell Lady** (2985), born 2nd March, 1924, bred by W. J. Westlake; s Lukesland Hero (342), d Yealmpstone Princess 5th (411), s d Quither General (2).

II. (**£5.**)—W. J. WESTLAKE, Godwell, Ivybridge, S. Devon, **Godwell Lassie 2nd**, born 2nd March, 1923; s Lukesland Hero (342), d Yealmpstone Princess 5th (411), s d Quither General 2nd.

III. (**£2.**)—H. E. BENNETT, Hawkenbury, Staplehurst, Kent, **Godwell Lassie** (2987), born 2nd March, 1924, bred by W. J. Westlake: s Lukesland Hero (342), d Yealmpstone Princess 5th (411), s d Quither General (2).

R. EARL DE LA WARR, Withyham, **Buckhurst White Rose 3rd**, born 25th May, 1924, bred by M. H. Moore, Ipplepen, Devon: s Yealmpstone Purpose (148), d Ipplepen Cyclamen (1019), s d Torland Jumbo (54).

H.C.—Lt.-Col. A. DELME-RADCLIFFE, Indian Army (Retired), Shenley House, Headcorn, Kent, **Shenley Snow Princess 2nd**, born 21st March, 1924; s Yealmpstone Right Sort, d Wizaller Snowflake 7th, s d Netherton Subaltern.

C.—CROSS, HALL & HALL, Nether Hall, Bradfield, Manningtree, Essex, **Bradfield Primula I** (3255), born 14th May, 1924; s Quither Peter (530), d Devonshire Primula (2163), s d Torlands Jumbo (54).—CROSS, HALL & HALL, **Bradfield Primula II** (3257), born 14th May, 1924; s Quither Peter (530), d Devonshire Primula 2nd (2163), s d Torlands Jumbo (54).

CLASS 225.—*Pair of Long White Lop-Eared Breeding Sows, farrowed in* 1925. [5 entries.]

I. (**£7.**)—W. H. NEAL, Yealmpstone Farm, Plympton, **Flowers**, born 10th January; s Netherton Erle King, d Yealmpstone Flowers.

II. (**£4.**)—W. J. WESTLAKE, Godwell, Ivybridge, S. Devon, **Godwell Beauty 1st and 2nd**, born 26th January; s Ipplepen Sultan (552), d Colwill Bobby (3205), s d Haberton Premier (86).

III. (**£2.**)—EARL DE LA WARR, Withyham, **Buckhurst Duchess 1st and 2nd**, born 15th January; s Priory Marvel (574), d Ipplepen Duchess (2025).

R.—G. Gilmer, Kingston, near Lewes, Sussex, **Sussex Content 1st and 2nd,** born 25th March; s Devonshire Forager, d Ipplepen Beauty (1427), s d Netherton Defender (140).

H.C.—W. E. Smith, jun., Wenhaston Hall, near Halesworth, Suffolk, **Wenhaston Princess and Wenhaston Primrose,** born 15th February; s Devonshire Someday (402), d Yealmpstone Queen (71), s d Huxhams Boar.

BACON PIGS.

Class 226.—*Pair of Pigs of any breed or first cross (the cross to be stated), best suitable for the Wiltshire cut of Bacon.* [11 entries.]

I. (£7.)—C. H. Simmons, 27, Brewer Street, Maidstone, Large White and Large Black.

II. (£4.)—Lt.-Col. A. Delme-Radcliffe, D.S.O., Indian Army (Retired), Shenley House, Headcorn, Kent, Long White Lop-eared.

III. (£2.)—J. Pierpont Morgan, Wall Hall, Aldenham, Watford, Large White, born 25th October, 1924; s Wallington Adonis 6th (Vol. 41), d Hatley Lilly 6th (105806).

R.—Brooks & Folwell, Whittings Farm, Halling, Kent, Large and Middle White, born 25th October, 1924; s Buches King John (34), d Queen.

V.H.C.—Cross, Hall & Hall, Nether Hall, Bradfield, Manningtree, Essex, Long White Lop-eared.

PRODUCE.

CIDER.

Class 227.—*Novice Class. Cask of not less than* 9 *and not more than* 30 *gallons of Cider made in* 1924 *by an Exhibitor who had not previously taken a first prize in any public exhibition.* [5 entries.]

I. (£5).—A. J. Pullin.

II. (£3.)—W. A. Merritt.

III. (£2.)—H. Winter.

R.—R. J. Denning.

Class 228.—*Cask of not less than* 9 *and not more than* 30 *gallons of Cider, made in* 1924, *of a specific gravity not exceeding* 1.015 *at* 60 *deg. Fahr.* [6 entries.]

I. (£5.)—H. J. Davis.

II. (£3.)—H. J. Davis.

III. (£2.)—Pullin Bros.

R.—Quantock Vale Cider Co. (Ld.)

CLASS 229.—12 *Quart Bottles of Cider, made in* 1924, *of a specific gravity not exceeding* 1.015 *at* 60 *deg. Fahr.* [6 entries.]

I. (**£5.**)—H. J. DAVIS.
II. (**£3.**)—H. J. DAVIS.
III. (**£2.**)—PULLIN BROS.
R.—PULLIN BROS.

CLASS 230.—*Cask of not less than* 9 *and not more than* 30 *gallons of Cider, made in* 1924. [6 entries.]

I. (**£5.**)—H. J. DAVIS.
II. (**£3.**)—H. J. DAVIS.
III. (**£2**).—QUANTOCK VALE CIDER CO. (LD.)
R.—PULLIN BROS.
H.C.—STYLE & WINCH (LD).

CLASS 231.—12 *Quart Bottles of Cider, made in* 1924. [8 entries.]

I. (**£5.**)—H. J. DAVIS.
II. (**£3.**)—PULLIN BROS.
III. (**£2.**)—QUANTOCK VALE CIDER CO. (LD).
R.—H. J. DAVIS.
V.H.C.—PULLIN BROS.

(The First Prize in Class 232 was given by Lord Bledisloe, K.B.E.)

CLASS 232.—12 *Quart Bottles of Cider, made in any year, of a specific gravity not exceeding* 1.005 *at* 60 *deg. Fahr.* [5 entries.]

I. (**£5.**)—PULLIN BROS.
II. (**£3.**)—PULLIN BROS.
III. (**£2.**)—QUANTOCK VALE CIDER CO. (LD.)
R.—H. J. DAVIS.

CLASS 233.—12 *Quart Bottles of Cider, made in any year previous to* 1924. [5 entries.]

I. (**£5.**)—PULLIN BROS.
II. (**£3.**)—H. J. DAVIES.
III. (**£2.**)—J. L. YEOMANS.

HOPS.

(Of the growth of 1924).

Prizes given by the Maidstone Local Committee.

CLASS 234.—*Sample of East Kent Hops.* [9 entries.]

I. (**£10.**)—EXORS OF S. NEAME, Harefield, Sellings, Faversham.
II. (**£5.**)—LORD FITZWALTER, Goodnestone Park, Canterbury.
R.—F. H. CURLING, Perry Court, Faversham.

CLASS 235.—*Sample of Mid-Kent Hops.* [4 entries.]

I. (**£10.**)—W. PHILLIPS, Hermitage Farm, Wateringbury, Kent.

II. (**£5.**)—W. ROGERS, The Court Lodge, Horton Kirby, Kent.

R.—W. & F. T. HIGHWOOD, Hertsfield, Marden, Kent.

CLASS 236.—*Sample of Weald of Kent Hops.* [11 entries.]

I. (**£10.**)—T. LEVETT, Etchinghill, Goudhurst, Kent.

II. (**£5.**)—J. D. & A. J. LARGE, Cherry Gardens, Goudhurst, Kent.

R.—W. A. LARGE, Mabledon Farm, Tonbridge.

CLASS 237.—*Sample of Sussex Hops.* [1 entry.]

I. (**£10.**) R. P. MAIR, Wick, Udimore, Sussex.

CHAMPION PRIZE.

Best Sample of Hops in any of the Classes.

I. (**£20.**)—EXORS. OF S. NEAME, Harefield, Sellings, Faversham

CHEESE.

CLASS 238.—*Three Cheddar Cheeses (not less than* 56*lbs. each), made in* 1924. [7 entries.]

I. (**£15.**)—S. T. WHITE.

II. (**£10.**)—G. R. COLE.

III. (**£5**).—F. G. NURSE.

R.—H. H. PICKFORD.

CLASS 239.—*Three Cheddar Cheeses (not over* 56*lbs. each), made in* 1924. [6 entries.]

I. **£10.**)—S. T. WHITE.

II. (**£7.**)—MRS. S. J. STEEDS.

III. (**£4.**)—H. H. PICKFORD.

R.—G. R. COLE.

CLASS 240.—*Four Loaf or other Truckle Cheeses, made in* 1924. [10 entries.]

I. (**£5**).—G. R. COLE.

II. (**£3.**)—Mrs. S. J. STEEDS.

III. (**£2.**)—E. PADFIELD.

R.—H. H. PICKFORD.

C.—Mrs. C. NAISH.

CLASS 241.—*Three Caerphilly Cheeses, made in* 1925. [4 entries.]

I. (**£5.**)—A. F. SOMERVILLE.

II. (**£3**).—WEST OF ENGLAND CREAMERY.

CREAM CHEESE, BUTTER AND CREAM.

(These Classes were not open to Professional Teachers).

Class 242.—*Three Cream or other Soft Cheeses.* [5 entries.]

I. (**£3.**)—Lt.-Col. Delme-Radcliffe.
II. **£2.**)—Mrs. W. Cooper.
III (**£1.**)—Mrs. F. I. Morcom.

Class 243.—*2lbs. of Fresh (or very slightly salted) Butter.* [23 entries.]

I. (**£4.**).—Mrs. L. R. Mildon.
II. (**£3.**)—T. R. Bolitho.
III. (**£2.**)—Mrs. M. Haywood.
IV. (**£1.**)—Mrs. L. Matthews.
R.—Miss I. Clarke.
H. C.—A. F. Somerville.

Class 244.—*2lbs. of Butter, in the making of which no salt had been used, judged on the last day of the Show.* [15 entries.]

I. (**£4.**)—Mrs. L. R. Mildon.
II. (**£3.**)—Mrs. L. Matthews.
III. (**£2.**)—A. M. Monteith.
IV. (**£1.**)—Mrs. M. Heywood.
R.—A. F. Somerville.

Class 245.—*12lbs. of Keeping Butter, in a jar or crock, delivered to the Secretary* 4 *weeks before the Show.* [4 entries.]

1. (**£5.**)—Mrs. L. R. Mildon.
II. (**£4.**)—A. F. Somerville.
III. (**£3.**)—Mrs. M. Heywood.

Class 246.—*Four half-pounds of Scalded Cream.* [5 entries.]

I. (**£3.**)—Mrs. F. Vicary.
II. (**£2.**)—Mrs. L. R. Mildon.
III. (**£1.**)—Lt.-Col. Delme-Radcliffe.

COMPETITIONS.

BUTTER-MAKING.

(No winner of a first prize given by this Society for Butter-making during the last 3 years was eligible to compete in Classes 247 to 249.)

CLASS 247.—*Novice Class. For Competitors who had not hitherto won a prize for Butter-making at the London Dairy Show or the Shows of the Royal Agricultural or Bath and West Society. On the 1st day of the Show.* [7 entries.]

I. (**£4.**)—Miss O. J. ROBISON.
II. (**£3.**)—Miss M. SALMON.
III. (**£1 10s.**).—J. DYSON.
R.—Miss M. SMITH.

CLASS 248.—*For Men and Women, bona fide workers on a farm. On the 2nd day of the Show.* [6 entries.]

I. (**£4**).— Miss E. PARRY.
II. (**£3.**)—Miss K. ROGERS.
III. (**£1 10s.**)—Miss R. E. MITCHELL.
R.—Miss M. SMITH.
H.C.—Miss P. RIGBY.

CLASS 249.—*For Students who had been through a course of instruction in Butter-making at any County Council School. and who had not previously won a first or second prize at one of the Society's Shows. On the 3rd day of the Show.* [11 entries.]

I. (**£4**).—Miss O. J. ROBISON.
II. (**£3**).—Miss K. ROGERS.
III. (**£1 10s.**)—J. DYSON.
R.—Miss P. RIGBY.
V.H.C.—Miss M. SMITH.—Miss M. SALMON.
H.C.—Miss A. ELLIOTT.

CLASS 250.—*For Men and Women. On the 4th day of the Show.* [12 entries.]

I. (**£4.**)—Mrs. C. YATES.
II. (**£3.**)—Miss R. E. MITCHELL
III. (**£1 10s.**)—Miss K. ROGERS.
R.—Miss J. JAMES.
V.H.C.—Miss O. J. ROBISON.—Miss E PARRY.
H.C.—J. DYSON.
C.—Miss P. RIGBY.

CLASS 251.—*For Winners of First and Second Prizes in the Butter-making Classes* 247 *to* 251, *or at any previous meeting of the Society. On the* 5*th day of the Show.* [8 entries.]

I. (Gold Medal).—Mrs. C. YATES.
II. (Silver Medal).—Miss J. JAMES.
III. (Bronze Medal).—Miss R. E. MITCHELL.
R.—Miss O. J. ROBISON.
V.H.C.—Miss E. PARRY.
H.C.—Miss M. SALMON.—Miss K. ROGERS.—Miss R. M. GWILLIM.

MILKING.

CLASS 252.—*For Men,* 16 *years of age and over.* [7 entries.]

I. (**£2.**)—G. WILEY.
II. (**£1.**)—E. A. HAWKINS.
III. (**15s.**)—A. PAYNE.

CLASS 253.—*For Women,* 16 *years of age and over.* [2 entries.]

I. (**£2.**)—Miss L. BIGNOLD.

CLASS 254.—*For Boys and Girls, under* 16 *years of age—First prize,* £1 10*s.—second,* £1*—third,* 15*s.—fourth,* 10*s.*

[NO ENTRY.]

SHOEING.

CLASS 255.—*For Cart Horse Shoeing by Smiths. On the* 2*nd day of the Show.* [12 entries.]

I. (**£4.**)—J. H. BAKER, A.F.C.L.
II. (**£3.**)—G. FISHENDEN.
III. (**£2**).—A. HAMMOND.
IV. (**£1.**)—J. M. RALPH.
R.—E. N. WAKEFIELD.
V.H.C.—G. J. CARTER, R.S.S.

SPECIAL LOCAL PRIZES.

GIVEN BY THE KENT COUNTY COUNCIL.

Best Competitors in Class* 255, *resident in Kent.

I. (**£3.**)—G. FISHENDEN.
II. (**£2.**)—A. HAMMOND.
III. (**£1.**)—J. M. RALPH.

Class 256.—*For Nag Horse Shoeing by Smiths. On the 3rd day of the Show.* [10 entries.]

I. **£4.**).—J. H. Baker, A.F.C.L.
II. (**£3.**)—G. J. Carter, R.S.S.
III. (**£2.**)—E. G. Barton.
IV. (**£1.**)—W. R. Martin.
R.—H. W. Doad.

Special Local Prizes.

Given by the Kent County Council.

Best Competitors in Class 256, *resident in Kent.*

I. (**£3.**)—G. J. Carter, R.S.S.
II.. (**£2.**)—E. G. Barton.
III. **£1.**)—W. R. Martin.

Class 257.—*For Hunter Shoeing by Smiths. On the 4th day of the Show.* [5 entries.]

II. (**£3.**)—E. N. Wakefield.
III. (**£2.**)—H. W. Doad.
IV. (**£1.**)—W. R. Martin.

Class 258.—*For Shoe Making or Turning by Smiths, the patterns and description of the Shoes to be supplied by the Judge. On the 5th day of the Show.* [5 entries.]

II. (**£3.**)—E. N. Wakefield.
III. (**£1.**)—W. R. Martin.

Special Local Prizes.

Given by the Kent County Council.

Best Competitors in Class 258, *resident in Kent.*

I. (**£3.**)—E. N. Wakefield.
II. (**£2.**)—W. R. Martin.
III. (**£1.**)—G. Fishenden.

Challenge Cup.

***Given by Messrs. William Martin, Sons and Co., "Dundyvan" Iron and Steel Works, Coatbridge, per Godwin, Warren & Co., Ltd., Bristol, for the best competitor in Class* 256.**

I.—J. H. Baker, A.F.C.L.

ALLOTMENTS.

The Local Sub-Committee offered Prizes to Allotment Holders in the Borough of Maidstone or those holding an Allotment under the Local Authority.

DIVISION I.—*North and East Maidstone.*

I. (**£3.**)—E. C. WILCOX, Sandling Lane.
II. (**£2.**)—W. H. ATTEWILL, Sandling Lane.
III. (**£1.**)—G. ELLINGHAM, Sandling Lane.
IV. (**10/-.**)—L. W. SHERWOOD, Danno Meadow.

DIVISION II.—*South Maidstone.*

I. (**£3.**)—A. DAY, Hastings Road.
II. (**£2.**)—E. HADAWAY, Mote Park.
III. (**£1.**)—W. LAWRENCE, College Wharf.
IV. (**10/-**)—A. SWIFT, Hastings Road.

DIVISION III.—*West Maidstone.*

I. (**£3.**)—G. W. BRIDGES, Bower Mount.
II. (**£2.**)—C. CONWAY, Bower Mount.
III. (**£1.**)—C. PATEMAN, Tonbridge Road.
Equal IV. (**5/-.**)—C. F. MITCHELL, Rocky Hill.
Equal IV. (**5/-.**)—W. L. ASHLEY, Rocky Hill.

CHAMPION PRIZES.

For the 1*st and* 2*nd Best Allotments in the three divisions as a whole.*

I. (**£5.**)—W. LAWRENCE, College Wharf.
II. (**£3.**)—E. HADAWAY, Mote Park.

POULTRY.

(The Birds in Classes 1 to 48 must have been hatched previous to January 1st, 1925.)

CLASS 1.—ANY TWO PURE BREEDS, BEST MATED TO CROSS FOR PRODUCING TABLE POULTRY.—COCK AND 3 HENS, BRED IN 1923 OR 1924, THE PROPERTY OF ONE EXHIBITOR [7 entries.]

I. (**£3.**)—J. H. BAKER & SON, *Indian Game—Light Sussex.*
II. (**£2.**)—E. A. MEACKEL, *Indian Game—Light Sussex.*
III. **£1.**)—LORD DEWAR, *Indian Game—Dorkings.*
R.—G. FALKENSTEIN, *Game—Dorkings.*
V.H.C.—G. M. HILLS, *Old English Game—Light Sussex.*—MRS. E. A. INNES, *Indian Game—R.I. White.*

CLASS 2.—COCHIN OR BRAHMA, COCK. [2 entries.]

I. (**£1.**)—LORD DEWAR, *Cochin.*

R.—J. C. SHUFFREY, *Cochin.*

CLASS 3.—COCHIN OR BRAHMA, HEN. [1 entry.]

I. (**£1.**)—J. C. SHUFFREY, *Cochin.*

CLASS 4.—PLYMOUTH ROCK (BARRED), COCK. [5 entries.]

I. (**£1.**)—W. COURT.

II. (**15s.**)—W. E. DENNIS.

R.—W. COURT.

CLASS 5.—PLYMOUTH ROCK (BARRED), HEN. [7 entries.].

I. (**£1.**)—W. COURT.

II. (**15s.**)—W. COURT.

III. (**10s.**)—W. COURT.

R.—W. COURT.

V.H.C.—W. E. DENNIS.

CLASS 6.—PLYMOUTH ROCK (ANY OTHER VARIETY), COCK [8 entries.].

I. (**£1.**)—W. E. DENNIS, *Buff.*

II. (**15s.**)—H. O. CLARKE.

III. (**10s.**)—T. JONES.

R.—Mrs. E. JACOB.

V.H.C.—Mrs. E. JACOB.—H. O. CLARKE.

CLASS 7.—PLYMOUTH ROCK (ANY OTHER VARIETY), HEN. [7 entries.]

I. (**£1.**)—LORD DEWAR, *White.*

II. (**15s.**)—L. ARDERN, *Black.*

III. (**10s.**)—H. O. CLARKE.

R.—Mrs. E. JACOB.

V.H.C.—Mrs. E. JACOB.—H. SPENSLEY.

CLASS 8.— ORPINGTON, (BLACK), COCK. [2 entries.].

I. (**£1.**)—G. F. BERRY.

R.—T. C. PINNIGER.

CLASS 9.—ORPINGTON (BLACK), HEN. [3 entries.].

I. (**£1.**)—T. C. PINNIGER.

II. (**15s.**)—C. J. SPINKE.

R.—Lt.-Commander H. G. NALDER.

CLASS 10.—ORPINGTON (ANY OTHER VARIETY), COCK. [3 entries.]

I. **(£1.)**—W. C. BLACKLOCKS, *Buff.*

CLASS 11—ORPINGTON (ANY OTHER VARIETY), HEN. [2 entries.]

III. **(10s.)**—W. C. BLACKLOCKS, *Buff.*

CLASS 12.—MINORCA COCK. [1 entry.]

I. **(£1.)**—LORD DEWAR.

CLASS 13.—MINORCA, HEN. [3 entries.]

I. **(£1.)**—LORD DEWAR.

II. **(15s.)**—GOODMAN BROS.

CLASS 14.—RHODE ISLAND RED, COCK. [7 entries.]

I. **(£1.)**—J. H. BAKER & SON.

II. **(15s.)**—H. E. SHARP.

III. **(10s.)**—G. H. MUZZLEWHITE.

R.—W. C. BLACKLOCKS.

V.H.C.—J. R. ALLEN.—CAPT. A. OWEN.

CLASS 15.—RHODE ISLAND RED, HEN. [5 entries.]

I. **(£1.)**—G. H. MUZZLEWHITE.

II. **(15s)**—J. H. BAKER & SON.

III. **(10s)**—PARK HOUSE POULTRY FARM.

R.—W. C. BLACKLOCKS.

V.H.C.—E. A. HARBORD.

CLASS 16.—SUSSEX (LIGHT), COCK. [11 entries.]

I. **(£1.)**—J. H. BAKER & SON.

II. **(15s.)**—J. RUSSEL.

III. **(10s.)**—Mrs. N. MARSTON.

R.—J. RUSSEL.

V.H.C.—G. GILL.—Mrs. M. A. GRANT.—E. A. HARBORD.—Mrs. H. KENT.

H.C.—A. J. FALKENSTEIN.

CLASS 17.—SUSSEX (LIGHT), HEN. [13 entries.]

I. **(£1.)**—A. J. FALKENSTEIN.

II. **(15s.)**—J. RUSSEL.

III. **10s.)**—Mrs. M. A. GRANT.

R.—J. H. BAKER & SON.

V.H.C.—E. A. HARBORD.—LINLEY & ROGERS.—Mrs. N. MARSTON—E. A. MEACKEL.

H.C.—G. M. HILLS.—PARK HOUSE POULTRY FARM.

CLASS 18.—SUSSEX (ANY OTHER VARIETY), COCK. [7 entries.]

I. (£1.)—A. J. FALKENSTEIN.
II. (15s.—J. RUSSEL.
III. (10s.)—Mrs. N. MARSTON, *Red.*
R.—Mrs. M. A. GRANT.
V.H.C.—J. H. BAKER & SON, *Speckled.*—W. VEITCH, *Speckled.*
H.C.—Mrs. M. A. GRANT.

CLASS 19.—SUSSEX (ANY OTHER VARIETY), HEN. [8 entries.]

I. (£1.)—A. J. FALKENSTEIN.
II. (15s.)—Mrs. E. G. RYALL.
III. (10s.)—F. A. MILES, *Red.*
R.—J. RUSSEL.
V.H.C.—Mrs. M. A. GRANT.—Mrs. N. MARSTON. *Red.*
H.C.—Mrs. M. A. GRANT.

CLASS 20.—DORKING (ANY VARIETY). COCK. [3 entries.].

I. (£1.) —A. J. MAJOR.
II. (15s.)—A. J. MAJOR.
R.—T. BRIDEN, *Dark.*

CLASS 21.—DORKING (ANY VARIETY), HEN. [4 entries.]

I. (£1.) -A. J. MAJOR.
II. (15s.)—A. J. MAJOR.
R.—Mrs. M. A. GRANT, *Silver Grey.*
V.H.C.—T. BRIDEN, *Dark.*

CLASS 22.—LANGSHAN, COCK OR HEN. [2 entries.]

I. (£1.)—LINDLEY & ROGERS.
R.—PARK HOUSE POULTRY FARM.

CLASS 23.—WYANDOTTE (WHITE), COCK. [9 entries.]

I. (£1.)—LORD DEWAR.
II. (15s.)—W. H. BREWER.
III. (10s.)—W. VEITCH.
R.—PARK HOUSE POULTRY FARM.
V.H.C.—G. N. PRITCHARD.
H.C.—T. B. WILLMETTS.

CLASS 24.—WYANDOTTE (WHITE), HEN. [12 entries.]

I. (**£1.**)—LORD DEWAR.

II. (**15s.**)—W. H. BREWER.

III. (**10s.**)—LORD DEWAR.

R.—G. N. PRITCHARD.

V.H.C.—W. VEITCH.—T. B. WILLMETTS.

H.C.—Capt. and Mrs. RUTHERFORD.—LINDLEY & ROGERS.—PARK HOUSE POULTRY FARM.

CLASS 25.—WYANDOTTE (COLUMBIAN), COCK. [3 entries.]

I. (**£1.**)—G. TOMKIN.

II. (**15s.**)—G. TOMKIN.

R.—L. H. WACE.

CLASS 26.—WYANDOTTE (COLUMBIAN), HEN. [6 entries.]

I. (**£1.**)—G. TOMKIN.

II. (**15s.**)—J. R. ALLEN.

III. (**10s.**)—H. L. DICKINSON.

R.—C. E. B. HAWKINS.

H.C.—L. H. WACE.

CLASS 27.—WYANDOTTE (ANY OTHER VARIETY), COCK. [8 entries.]

I. (**£1.**)—W. H. BREWER.

II. (**15s.**)—A. HOLDEN, *Laced.*

III. (**10s.**)—W. C. BLACKLOCKS, *Gold Laced.*

R.—R. W. WHITAKER, *Gold Laced.*

CLASS 28.—WYANDOTTE (ANY OTHER VARIETY), HEN. [9 entries.]

I. (**£1.**)—H. SPENSLEY, *Silver.*

II. (**15s.**) J. H. BAKER & SON.

III. (**10s.**)—A. HOLDEN, *Laced.*

R.—J. MELLOR, *Partridge.*

V.H.C. ROGERS BROS., *Gold.*—ROGERS BROS., *Silver.*

H.C.—W. C. BLACKLOCKS, *Gold Laced.*—W. C. BLACKLOCKS.

CLASS 29.—LEGHORN (WHITE), COCK. [3 entries.

I. (**£1.**)—LORD DEWAR.

II. (**15s.**)—A. H. STANBURY.

CLASS 30.—LEGHORN (WHITE), HEN. [5 entries.]

I. (**£1.**)—LORD DEWAR.

II. (**15s.**)—A. H. STANBURY.

R.—A. H. STANBURY.

Class 31.—LEGHORN (Any other Colour), COCK. [4 entries].

I. (£1.)—Mrs. H. Kent, *Black.*
II. (15s.)—Mrs. E. A. Innes, *Exchequer.*

Class 32.—LEGHORN (Any other Colour), HEN. [6 entries.]

I. (£1.)—H. O. Clarke, *Black.*
II. (15s.)—J. Robinson, *Black.*
III. (10s.)—Mrs. H. Kent, *Black.*
R.—White Knight Poultry Farm, *Exchequer Leghorn.*

Class 33.—CAMPINE, COCK. [1 entry.]

II. (15s.)—Lt.-Comm. H. G. Nalder.

Class 34.—CAMPINE, HEN. [2 entries.]

I. (£1.)—J. S. Appleton.
R.—Lt.-Comm. H. G. Nalder.

Class 35.—HAMBURG (Any Variety), COCK. [2 entries.]

I. (£1.)—W. Snell.
R.—G. Harris, *Silver Spangled.*

Class 36.—HAMBURG (Any Variety), HEN. [6 entries.]

I. (£1.)—W. H. Avery.
II. (15s.)—W. H. Avery.
III. (10s.)—W. Snell, *Black.*
R.—G. Harris, *Silver Spangled.*
V.H.C.—W. Snell, *Gold Pencilled.*
H.C.—R. W. Whitaker, *Black.*

Class 37.—OLD ENGLISH GAME (Black Red), COCK. [4 entries.]

I. (£1.)—Hearn Bros.
II. (15s.)—J. H. Baker & Son.
R.—F. G. Bigg & Son.
V.H.C.—G. M. Hills.

Class 38.—OLD ENGLISH GAME (Black Red), HEN. [3 entries.]

I. (£1.)—J. H. Baker & Son.
R.—Hearn Bros.

Class 39.—OLD ENGLISH GAME (Any other Colour), COCK. [2 entries.]

I. (£1.)—R. B. Price.

CLASS 40.—OLD ENGLISH GAME (ANY OTHER COLOUR), HEN. [3 entries.]

I. (£1.)—F. G. BIGG & SON.
II. (15s.)—J. H. BAKER & SON.
H.C.—R. B. PRICE.

CLASS 41.—INDIAN GAME, COCK. [4 entries.]

I. (£1.)—J. H. BAKER & SON.
II. (15s.)—L. ARDERN.
R.—E. C. KNIGHT.

CLASS 42.—INDIAN GAME, HEN. [9 entries.]

I. (£1.)—J. H. BAKER & SON.
II. (15s.)—L. ARDERN.
III. (10s.)—W. G. BRENT.
R.—E. C. KNIGHT.

CLASS 43.—FRENCH (INCLUDING FAVEROLLES), COCK. [6 entries.]

I. (£1.)—G. HENWOOD.
II. (15s.)—Miss I. COOKSON, *Salmon Faverolle.*
III. (10s.)—J. CARTER, *Houdan.*
R.—G. HENWOOD.
H.C.—F. W. GOODWIN, *Houdan.*

CLASS 44.—FRENCH (INCLUDING FAVEROLLES), HEN. [4 entries.]

I. (£1.)—G. HENWOOD.
II. (15s.)—G. HENWOOD.
R.—F. W. GOODWIN, *Houdan.*

CLASS 45.—ANCONA COCK. [1 entry.]

II. (15s.)—J. G. PEDLER.

CLASS 46.—ANCONA, HEN. [4 entries.]

I. (£1.)—G. GILL.
II. (15s.)—W. K. FLOWER.
R.—G. GILL.

CLASS 47.—ANY OTHER DISTINCT BREED NOT PREVIOUSLY MENTIONED (EXCLUDING BANTAMS), COCK. [8 entries.]

I. (£1.)—J. C. HUXTABLE. *Malay.*
II. (15s.)—L. ARDERN, *Jubilee Game.*
III. (10s.)—J. H. BAKER & SON.
R.—LORD DEWAR, *Modern Game.*
V.H.C.—ABBOT BROS.—H. KEY, *Gold Poland.*
H.C.—A. TAYLOR, *Barnvelder.*

CLASS 48.—ANY OTHER DISTINCT BREED NOT PREVIOUSLY MENTIONED (EXCLUDING BANTAMS), HEN. [7 entries.]

I. (£1.)—J. H. BAKER & SON.

II. (15s.)—L. ARDERN, *Assel.*

III. (10s.)—LORD DEWAR, *Modern Game.*

R.—F. R. CRAWSHAY, *Dutch Barnvelder.*

V.H.C.—ABBOT BROS.—J. C. HUXTABLE, *Malay.*—H. KEY, *Gold Poland.*

SELLING CLASSES.

CLASS 49.—ANY DISTINCT BREED, COCK OR COCKEREL (PRICE NOT TO EXCEED £1 1s.). [10 entries.]

I. (£1.)—LORD DEWAR.

II. (15s.)—J. H. BAKER & SON.

III. (10s.)—L. ARDERN.

R.—T. C. PINNIGER, *Black Orpington.*

V.H.C.—J. M. COOK, *Buff Leghorn.*—E. A. HARBORD, *Rhode Island Red.*—Mrs. E. A. INNES, *Indian Game.*—Mrs. E. JACOBS, *Buff Plymouth Rock.*—S. SPINKS, *Black Orpington.*

CLASS 50.—ANY DISTINCT BREED, HEN OR PULLET (PRICE NOT TO EXCEED £1 1s.). [12 entries.]

I. (£1.)—G. C. OLIVER, J.P., *Light Sussex.*

II. (15s.)—J. H. BAKER & SON.

III. (10s.)—S. SPINKE, *Black Orpington.*

R.—E. A. MEAKEL, *Light Sussex.*

V.H.C.—L. ARDERN.—LORD DEWAR—E. A. HARBORD, *Rhode Island Red.*

H.C.—W. COURT, *Barred Rock.*—E. A. HARBORD, *Light Sussex.*—R. W. WHITAKER.

CHICKENS OF 1925.

CLASS 51.—COCHIN, BRAHMA, PLYMOUTH ROCK, ORPINGTON, LANGSHAN, SUSSEX OR DORKING, COCKEREL. [6 entries.]

I. (£1.)—A. J. MAJOR, *Dorking*, hatched January 2.

II. (15s.)—F. A. MILLS, *Light Sussex.*

III. (10s.)—A. J. FALKENSTEIN, *Sussex*, hatched January 11.

R.—T. BRIDEN, *Dark Dorking*, hatched January 15.

H.C.—E. A. HARBORD, *Light Sussex*, hatched January.

CLASS 52.—COCHIN, BRAHMA, PLYMOUTH ROCK, ORPINGTON, LANGSHAN, SUSSEX OR DORKING, PULLET. [9 entries.]

I. (£1.)—A. J. MAJOR, *Dorking*, hatched January 2.

II. (15s.)—A. J. FALKENSTEIN, *Sussex*, hatched January 11.

III. (**10s.**)—T. Briden, *Dark Dorking*, hatched January 15.

R.—E. A. Harbord, *Light Sussex*, hatched January.

V.H.C.—F. A. Miles, *Light Sussex*.—F. & T. Neame, *Light Sussex*.—Park House Poultry Farm, *Light Sussex*, hatched January 10.

H.C.—F. & T. Neame, *Light Sussex*.

Class 53.—MINORCA, WYANDOTTE, LEGHORN, CAMPINE, HAMBURG, FAVEROLLES OR FRENCH, COCKEREL. [5 entries.]

I. (**£1.**)—Lord Dewar, hatched January 7.

II. (**15s.**)—Mrs. H. Kent, *Black Leghorn*, hatched January 25.

R.—Park House Poultry Farm, *White Wyandotte*, hatched January 10.

V.H.C.—F. & T. Neame, *White Wyandotte*.

Class 54.—MINORCA, WYANDOTTE, LEGHORN, CAMPINE, HAMBURG, FAVEROLLES OR FRENCH, PULLET. [5 entries.]

I. (**£1.**)—Lord Dewar, hatched January 7.

II. (**15s.**)—Mrs. H. E. Warren, *Brown Leghorn*, hatched January 2.

R.—Mrs. H. Kent, *Black Leghorn*, hatched February 6.

Class 55.—GAME, MALAY, OR ANY OTHER DISTINCT BREED NOT PREVIOUSLY MENTIONED, COCKEREL. [6 entries.]

I. (**£1.**)—L. Ardern, *Indian Game*, hatched January 3.

II. (**15s.**)—J. H. Baker & Son, *Indian Game*, hatched January 2.

III. (**10s.**)—W. G. Brent, *Indian Game*, hatched January 3.

R.—F. G. Denner, hatched January 3.

Class 56.—GAME, MALAY, OR ANY OTHER DISTINCT BREED NOT PREVIOUSLY MENTIONED, PULLET. [7 entries.]

I. (**£1.**)—L. Ardern, *Indian Game*, hatched January 3.

II. (**15s.**)—J. H. Baker & Son, *Indian Game*, hatched January 2.

III. (**10s.**)—W. G. Brent, *Indian Game*, hatched January 3.

R.—F. G. Denner, hatched January 3.

LIVE TABLE POULTRY.

Class 57.—PAIR OF COCKERELS OF ANY PURE BREED, HATCHED IN 1925. [10 entries.]

I. (**£1.**)—L. Ardern, *Indian Game*, hatched January 6.

II. (**15s.**)—A. J. Falkenstein, *Sussex*, hatched January 11.

III. (**10s.**)—J. H. Baker & Son, *Indian Game*, hatched January 2.

R.—G. C. Oliver, J.P., *Light Sussex*, hatched January 2.

V.H.C.—Mrs. M. A. Grant, *Sussex*.—A. J. Major, *Dorkings*, hatched January 2.

H.C.—G. Falkenstein, *Light Sussex*, hatched February 1.

CLASS 58.—PAIR OF PULLETS OF ANY PURE BREED, HATCHED IN 1925. [10 entries.]

I. (**£1.**)—L. ARDERN, *Indian Game,* hatched January 6.

II. (**15s.**)—A. J. FALKENSTEIN, *Sussex,* hatched January 11.

III. (**10s.**)—J. H. BAKER & SON, *Indian Game,* hatched January 2.

R.—A. J. MAJOR, *Dorkings,* hatched January 2.

V.H.C.—MRS. M. A. GRANT, *Sussex.*—G. C. OLIVER, J.P., *Light Sussex,* hatched January 2.

H.C.—F. R. CRAWSHAY, *Light Sussex,* hatched January.

CLASS 59.—PAIR OF CROSS-BRED COCKERELS, HATCHED IN 1925. [2 entries.]

I. (**£1.**)—E. A. HARBORD, *Light Sussex—Cuckoo Malvin,* hatched January.

R.—W. MITCHELL & SON, *Indian Game—Sussex,* hatched January 7.

CLASS 60.—PAIR OF CROSS-BRED PULLETS, HATCHED IN 1925. [3 entries.]

I. (**£1.**)—W. MITCHELL & SON, *Indian Game—Sussex,* hatched January 7.

R.—G. M. HILLS, *Game—Sussex.*

UTILITY POULTRY.

CLASS 61.—LIGHT BREED, COCK. [9 entries.]

I. (**£1.**)—MRS. E. A. INNES, *Exchequer Leghorn.*

II. (**15s.**)—LORD DEWAR.

III. (**10s.**)—J. M. COOK, *Buff Leghorn.*

R.—F. & T. NEAME, *Brown Leghorn.*

V.H.C.—J. H. BAKER & SON.—E. A. HARBORD, *White Leghorn.*—F. & T. NEAME, *Black Leghorn.*—WHITE KNIGHT POULTRY FARM, *Exchequer Leghorn.*

H.C.—H. E. SHARP, *Black Leghorn.*

CLASS 62.—LIGHT BREED, HEN. [20 entries.]

I. (**£1.**)—J. M. COOK, *Buff Leghorn.*

II. (**15s.**)—J. C. THOMAS, *Exchequer Leghorn.*

III. (**10s.**)—GOODMAN BROS., *Minorca.*

R.—LORD DEWAR.

V.H.C.—J. BLACKSTONE, *Black Leghorn.*—T. M. GLASS, *White Leghorn.*—H. E. SHARP, *Black Leghorn.*

H.C.—J. H. BAKER & SON.—Lt.-Col. M. BELL, *Black Leghorn.*—T. M. GLASS, *White Leghorn.*—F. & T. NEAME, *Brown Leghorn.*—WHITE KNIGHT POULTRY FARM, *Exchequer Leghorn.*

CLASS 63.—HEAVY BREED, COCK. [20 entries.]

I. (**£1.**)—MRS. E. A. INNES, *Rhode Island White.*

II. **15s.**)—PARK HOUSE POULTRY FARM, *Rhode Island Red.*

III. (**10s.**)—LORD DEWAR.

R.—Mrs. E. A. Innes, *White Wyandotte.*

V.H.C.—Miss I. Cookson, *Jersey Black Giant.*—A. J. Falkenstein, *Sussex.*—H. E. Harrison, *Buff Orpington.*—Mrs. E. A. Innes, *Indian Game.*—Mrs. H. P. May, *Rhode Island Red.*—G. C. Oliver, J.P., *Light Sussex.*—H. E. Sharp, *Rhode Island Red.*

H.C.—J. H. Baker & Son.—Miss I. Cookson, *Light Sussex.*—E. A. Harbord, *Rhode Island Red.*

Class 64.—HEAVY BREED, HEN. [26 entries.]

I. (**£1.**)—Mrs. E. A. Innes, *Rhode Island White.*

II. (**15s.**)—G. C. Oliver, J.P., *Light Sussex.*

III. (**10s.**)—Lord Dewar.

R.—A. J. Falkenstein, *Sussex.*

V.H.C.—J. H. Baker & Son.—G. F. Berry, *White Wyandotte.*—E. A. Harbord, *Rhode Island Red.*—F. T. Neame, *Light Sussex.*—F. & T. Neame, *Light Sussex.*—F. & T. Neame, *White Wyandotte.*—Park House Poultry Farm, *White Wyandotte.*—H. E. Sharp, *Rhode Island Red.*—H. E. Sharp, *Rhode Island Red.*—H. E. Sharp, *White Wyandotte.*

H.C.—Lt.-Col. M. Bell, *White Wyandotte.*—Lt.-Col. M. Bell, *Light Sussex.*—G. Gill, *Light Sussex.*—E. A. Harbord, *Light Sussex.*—White Knight Poultry Farm, *Light Sussex.*

DUCKS, GEESE AND TURKEYS.

Class 65.—DRAKE OR DUCK (Aylesbury). [3 entries.]

I. (**£1.**)—Abbot Bros.

II. (**15s.**)—T. M. Glass.

R.—T. M. Glass.

Class 66.—DRAKE OR DUCK (Rouen). [5 entries.]

I. (**£1.**)—Abbot Bros.

II. (**15s.**)—S. Spinke.

R.—W. Veitch.

H.C.—F. E. A. Crouch.—S. Spinke.

Class 67.—DRAKE OR DUCK (Indian Runner). [2 entries.]

I. (**£1.**)—W. C. Blacklocks.

R.—W. G. Brent.

Class 68.—DRAKE OR DUCK (Any other Variety)—First Prize, £1—Second, 15s.—Third, 10s.

[No Entry.]

Class 69.—GANDER OR GOOSE. [1 entry.]

I. (**£1.**)—Abbot Bros.

Class 70.—TURKEY, COCK OR HEN. [1 entry.]

. (**£1.**)—Abbot Bros.

BATH & WEST & SOUTHERN COUNTIES SOCIETY.

OBJECTS OF THE SOCIETY AND PRIVILEGES OF MEMBERSHIP.

ANNUAL EXHIBITIONS.

THE Society annually holds an Exhibition in some city or town in England or Wales. Each section of the Society's district is visited at intervals, so that most Members have an opportunity of seeing the Show in their own neighbourhood every few years. Prizes to a large amount are given for Horses, Cattle, Sheep, Pigs, Farm Produce, &c. Provision is also made for the exhibition of Agricultural Implements and Machinery, Seeds, Cattle Foods, Artificial Manures, and articles of general utility. A substantially built and completely equipped working Dairy on a large scale is a special feature of these Exhibitions. Here explanatory demonstrations and comparative tests of implements and processes are carried on, with the assistance of well-known practical and scientific experts. and Butter-making Competitions are held. Among the features of the Annual Meeting are Shoeing, Milking and other Competitions, Poultry and Horticultural Shows, and Exhibitions illustrative of Bee-keeping, Home Industries, Manufacturers, Nature Study and Forestry.

Membership entitles to free admission to the Annual Exhibition, and also to the Grand Stand overlooking the Horse and Cattle Ring, to the Reserved Seats in the Working Dairy, and to the use of the Members' Special Pavilion for Luncheons, Reading, Writing, &c.

Entries can be made by Members (elected on or before the last Tuesday in January preceding the Show, or who have paid two years' subscription before the date of closing of entries), at about half the fees payable by Non-Members.

THE JOURNAL.

All Members receive free of charge the Society's Journal, which is published annually bound in cloth. It has for its aim the dissemination of agricultural knowledge in a popular form, and, in addition to original articles by well-known agricultural authorities, it contains particulars of the Society's general operations, full reports of its experimental and research work, prize awards, financial statements, list of Members, reviews of new books on agriculture, &c. (The price of the *Journal* to non-Members is 6s. 6d. post free.)

CHEMICAL AND OTHER FACILITIES.

The Society has a Consulting Chemist, *from whom Members can obtain analyses and reports at reduced rates of charge.* An arrangement has also been made under which Members of the Society can obtain, free of charge, from the National Fruit and Cider Institute at Long Ashton, analyses of cider-apples and perry-pears, and, with a view to assisting farmers and others in dealing with insect and other pests which affect agriculture, horticulture, &c., the Council have availed themselves of an offer from the Board of Economic Biology of the University of Bristol to investigate the nature of any insect or other pest and report upon it free of charge.

EXPERIMENTS.

Experiments on crops are conducted at experimental stations in various parts of the Kingdom, and *Members are enabled to take part in these and to receive reports thereon.*

MANUFACTURES, NATURE STUDY, FORESTRY, &c.

One of the objects for which the Society was founded was the encouragement of Arts as well as Agriculture, and, to this end, exhibitions are held of Manufactures and of work representative of Arts and Handicrafts. Exhibitions are also held illustrating Nature Study, as a branch of Education ; the Science of Forestry, &c.

TERMS OF MEMBERSHIP.

ANNUAL SUBSCRIPTIONS.

Governors, not less than	£2
Ordinary Members, not less than	£1
Tenant Farmers, the rateable value of whose holdings does not exceed £200 a year, not less than	10s.

Governors, who are eligible for election as President or Vice-President, are entitled, in addition to the privileges already mentioned, to an extra Season Ticket for the Annual Exhibition and for the Grand Stand, &c. Governors subscribing more than £2 are entitled to a further Ticket for every additional £1 subscribed.

Members subscribing less than £1 are entitled to all the privileges of Membership except that of entering Stock at reduced fees, and their admission Ticket for the Annual Show is available for *one day only*, instead of for the whole time of the Exhibition.

LIFE COMPOSITIONS.

Governors may compound for their Subscription for future years by payment, in advance, of £20 ; and Members by payment, in advance, of £10. Governors and Members who have subscribed for twenty years may become Life Members on payment of half these amounts.

Any person desirous of joining the Society can be proposed by a Member, or by the Secretary, 3, Pierrepont Street, Bath.

Telegraphic Address—" AGRICULTURE, BATH."

Telephone No. 610.

BATH & WEST & SOUTHERN COUNTIES SOCIETY.

GENERAL LAWS.

As revised in accordance with the Report of a Special Committee ; which Report was received and adopted by the Annual General Meeting of Members, held on May 19, 1923.

COMPOSITION OF THE SOCIETY.

I. The Society shall consist of a President, Vice-Presidents, Trustees, Council, Treasurer, Secretary, and Members.

OBJECTS.

II. The Society shall have the following objects :—

(*a*) To hold Exhibitions of breeding stock, agricultural implements, and such other articles connected with agriculture, horticulture, arts, manufactures or commerce, as may be determined upon by the Council.

(*b*) To conduct practical and scientific investigations in agriculture and horticulture.

(*c*) To promote technical education in agriculture and horticulture by providing means of systematic instruction.

(*d*) To publish a Journal for circulation.

SUBSCRIPTIONS.

III. The Annual Subscription for Members shall be as follows :—

Governors (who are eligible for election as President or Vice-President), not less than	£2
Ordinary Members, not less than	£1
Tenant Farmers (the rateable value of whose holdings does not exceed £200 a year), not less than	10s.

IV. The payment of £20 in one sum shall constitute a Governor for life, and of £10 in one sum, an Ordinary Member for life ; but any Governor who has subscribed not less that £2 annually for a period of twenty years may become a Life Governor on the further payment of £10 in one sum ; and any Ordinary Member, who has subscribed not less than £1 annually for the same period may become a Life-Member on the further payment of £5 in one sum.

V. Subscriptions shall become due and be payable in advance on the 1st of January in each year or as soon as the Subscriber has been elected a Member. When the election takes place during the last quarter of the year, the subscription payable on election will be considered as applying to the ensuing year.

VI. A Member shall be liable to pay his subscription for the current year unless he shall have given notice, in writing, to the Secretary before January 1st, of his intention to withdraw.

GOVERNING BODY.

VII. The entire management of the Society—including the making of Bye-laws, election of Members, determining the Prizes to be awarded, appointing Committees, fixing the places of Meetings and Exhibitions, appointing or removing the Treasurer, Secretary, and such other officers as may be required to carry on the business of the Society—shall be vested in the Council, who shall report its proceedings at the Annual Meeting of the Society.

VIII. The Council shall consist of the Patron (if any), President, Vice-Presidents, Trustees, and Treasurer (who shall be *ex-officio* Members), and of sixty-six elected Members.

ELECTION OF PRESIDENT, VICE-PRESIDENTS, TRUSTEES AND COUNCIL.

IX. The election of a President for the year, of any additional Vice-Presidents, or Trustees, and of the Members of Council representing the Divisions named in Law X., shall take place at the Annual Meeting of the Society, and they shall enter into office at the conclusion of the Exhibition during which such Annual Meeting has been held.

X. The sixty-six Members of the Council referred to in Laws VIII. and IX. shall consist of fifty-eight persons residing or representing property in the following Divisions, viz.:—

Twelve from the Counties of Devon and Cornwall, which shall be called the Western Division.

Twenty-four from the Counties of Somerset, Dorset and Wilts, which shall be called the Central Division ;

Twelve from the Counties of Hants, Berks, Oxon, Bucks, Middlesex, Surrey, Sussex and Kent, which shall be called the Southern Division ; and

Ten from the Counties of Worcester, Gloucester, Hereford and Monmouth, and the Principality of Wales, which shall be called the North-Western Division.

The remaining eight shall be elected (irrespective of locality) from the general body of members, and shall form a Division which shall be called the " Without Reference to District " Division.

XI. One half of the elected Members in each of the five Divisions named in Law X. shall retire annually by rotation, but shall be eligible for re-election.

XII. The Council shall have power to nominate a President, Vice-Presidents, Trustees, and Members of Council for the approval of the Annual Meeting, and to fill up such vacancies in their own body as are left after the Annual Meeting, or as may from time to time occur during the interval between the Annual Meetings.

XIII. Nominations to offices, election to which is vested in the whole body of Members must reach the Secretary ten days before the meeting, at which such vacancies are to be filled up.

MEETINGS.

XIV. The Annual Meeting of the Society shall take place during the holding of the annual Exhibition.

XV. Special General Meetings of the Society may be convened by the President on the written requisition of not less than three Members of the Council ; and all Members shall have ten days' notice of the object for which they are called together.

XVI. No Member of less than three months' standing, or whose subscription is in arrear, shall be entitled to vote at a Meeting.

EXHIBITIONS.

XVII. The Annual Exhibition of the Society shall be held in different Cities or Towns in successive years.

XVIII. All Exhibitors shall pay such fees as may be fixed by the Council. Members subscribing not less than £1 per annum, who have been elected previous to February 1st, and have paid the subscription for the current year, or if elected later, who pay a subscription for the previous year and the current subscription, before the date of closing of entries, shall be entitled to exhibit at such reduction in these fees as the Council shall determine.

PRIZES.

XIX. All prizes offered at the cost of the Society shall be open for competition to the United Kingdom.

XX. No person intending to compete for any prize offered at the annual Exhibition shall be eligible to act as a judge or to have any voice in the selection of judges to award the premiums in the department in which he exhibits.

XXI. If it be proved to the satisfaction of the Council that any person has attempted to gain a prize in this, or in any other society, by a false certificate or by a misrepresentation of any kind, such person shall thereupon be, for the future, excluded from exhibiting in this Society.

JOURNAL.

XXII. The Proceedings of the Society, Awards of Prizes, Financial Statements and Lists of Officers, Governors, and Members, shall be printed annually in the Society's *Journal*, and every Governor and Member, not in arrear with his subscription, shall be entitled to receive one copy, free of expense, and there shall be an additional number printed for sale.

POLITICS.

XXIII. No motion or question of a political tendency shall be introduced at any meeting of the Society, otherwise than with the consent of two-thirds of the members present at any meeting, and then only after 14 days' notice in writing.

ALTERATIONS IN LAWS.

XXIV. No new General Law shall be made or existing one altered, added to or rescinded, except at an Annual or Special General Meeting, and then only provided that a statement of particulars, in writing, shall have been sent to the Secretary at least twenty-one days previous to the Meeting at which the question is to be considered.

LIST OF OFFICERS,

1925–26.

PATRON.

HIS MOST GRACIOUS MAJESTY THE KING.

PRESIDENT.

The EARL of CLARENDON, The Grove, Watford.

TRUSTEES.

*Bath, The Marquis of, K.G., Longleat, Warminster.
Shelley, Sir J., Bart., Shobrooke Park, Crediton.
Napier, H. B., Ashton Court Estate Office, Long Ashton, Bristol.

VICE-PRESIDENTS.

Ashcroft, W.	13, The Waldrons, Croydon
Badcock, H. J.	Broadlands, Taunton
*Bath, Marquis of, K.G. . . .	Longleat, Warminster
Benyon, J. Herbert . . .	Englefield House, Reading
*Bledisloe, Lord, K.B.E. . . .	Lydney Park, Gloucester
Blythswood, Lord	Blythswood, Renfrew
*Boles, Lt.-Col. Sir Dennis F., Bart., C.B.E., D.L.	Watts House, Taunton
*Bute, Marquis of	The Castle, Cardiff
*Clinton, Lord	Heanton Satchville, Dolton, N. Devon
*Cornwallis, Col. F. S. W., C.B.E., D.L.	Linton Park, Maidstone
Cundall, H. M., I.S.O., F.S.A. . .	4, Marchmont Gardens, Richmond Hill, Surrey
Falmouth, Viscount	Tregothnan, Truro
Hambleden, Viscount . . .	Greenlands, Henley-on-Thames
Hobhouse, Right Hon. H. . . .	Hadspen House, Castle Cary
*Lansdowne, Marquis of, K.G. . .	Bowood, Calne
*Llewelyn, Sir J. T. D., Bart. . .	Penllergaer, Swansea
Mount Edgcumbe, The Earl of . .	Mount Edgcumbe, Devonport
Napier, H. B.	Long Ashton, Bristol.
Neville Grenville, R. . . .	Butleigh Court, Glastonbury

⁂ Those to whose names an asterisk (*) is prefixed have filled the office of President.

VICE-PRESIDENTS—continued.

Northumberland, Duke of	Albury Park, Guildford
Poltimore, Lord	Court Hall, North Molton, Devon
*Radnor, The Earl of	Longford Castle, Salisbury
Shelley, Sir J., Bart.	Shobrooke Park, Crediton
Somerville, A. F.	Dinder House, Wells
Strachie, Lord	Sutton Court, Pensford, Somerset
Temple, Earl	Newton St. Loe, Bristol
Tudway, C. C.	Milton Lodge, Wells
Wynford, Lt.-Col. Rt.-Hon. Lord, D.S.O.	Wynford House, Maiden Newton, Dorset

The Lord Warden of the Stanneries.

The Secretary and Keeper of the Records of the Duchy of Cornwall

The Receiver-General of the Duchy of Cornwall.

⁂ Those to whose names an asterisk (*) is prefixed have filled the office of President.

MEMBERS OF COUNCIL.

EX-OFFICIO MEMBERS.

THE PATRON.
THE PRESIDENT.

THE VICE-PRESIDENTS.
THE TRUSTEES.
THE TREASURER

ELECTED MEMBERS.

WESTERN DIVISION (DEVON AND CORNWALL).

(12 *Representatives.*)

Elected in 1924.

Name.	*Address.*
ACLAND, RT. HON. F. DYKE	Killerton, Exeter
BUCKINGHAM, REV. PREB.	The Rectory, Doddiscombsleigh, Exeter
GIBBS, MAJOR A. H.	Pytte, Clyst St. George, Exeter
MOORE-STEVENS, COL. R. A.	Woodhayes, Whimple, Devon
SHELLEY, J. F.	Posbury House, Crediton
WILLIAMS, JOHN	Scorrier House, Scorrier, Cornwall

Elected in 1925.

Name.	*Address.*
BOSCAWEN, REV. A. T.	Ludgvan Rectory, Long Rock, R.S.O., Cornwall
CAVE, E. C.	Paccombe, Sidford, Sidmouth, Devon
DAW, J. E.	4, Louisa Terrace, Exmouth
IMBERT-TERRY, F. B.	Blue Hayes, Broadclyst, Devon
LOPES, SIR HENRY Y. B., Bart.	Maristow, Roborough, South Devon
MARTYN, G.	Liskeard, Cornwall

CENTRAL DIVISION (SOMERSET, DORSET, AND WILTS.)

(24 *Representatives.*)

BEAUCHAMP, SIR F. B. Bart.	Woodboro' House, Peasedown St. John, Bath
BRUFORD, R.	Nerrols, Taunton
CLIVE, CAPT. E. A. B.	South Brympton, Yeovil
FOLKESTONE, VISCT.	LongfordCastle,Salisbury
GIBSON, J. T.	Warren House, Wrington
HOBHOUSE, A. L.	Hadspen House, Castle Cary, Somerset
LIPSCOMB, G.	Claverton Lodge, Bathwick hill, Bath
MILES, SIR C., Bart.	Manor House, Walton-in Gordano, Clevedon
NICHOLS, G.	Demerara House, Colston Avenue, Bristol
PASS, MAJOR A. D.,	Manor House, Wootton Fitzpaine, Charmouth, Dorset
PEARCE, T. H.	Parsonage Farm, Long Ashton, Bristol
SANDERS, THE RIGHT HON. LIEUT.-COL SIR R. A., Bart., M.P.	Bayford Lodge, Wincanton

FARWELL, MAJOR E. W.	Hylton Estate Office, Kilmersdon, Bath
GORDON, G. H.	The Barn House, Sherborne, Dorset
HILL, MAJOR V. T.	Woodspring Priory, near Weston-super-Mare
HOARE, SIR H. H. A., Bart.	Stourhead, Zeals, S.O., Wilts
HURLE, J. C.	Kilve Court, Bridgwater
KNIGHT, S. J.	Buckingham Lodge, Keynsham, Bristol
POPHAM, H. L.	Hunstrete House, Pensford, Bristol
RAWLENCE, E. A.	St. Andrew's, Salisbury
RAWLENCE, G. N.	Salisbury
SHAW, COL. F. S. KENNEDY	Teffont Magna, Salisbury
WATSON, CAPT. THE HON. T. H.	Cormiston, Milverton, Somerset
WHITE, A. R., O.B.E.	Charnage, Mere, Wilts

SOUTHERN DIVISION (HANTS, BERKS, OXON, BUCKS, MIDDLESEX, SURREY, SUSSEX AND KENT.)

(12 *Representatives.*)

BATHURST, SIR F. H., Bart., D.S.O.	Somborne Park, Kings Somborne, Hants
COBB, H. M.	Higham, Rochester
JERVOISE, MAJOR F. H. T.	Herriard Park, Basingstoke
SUTTON, E. P. F.	Sidmouth Grange,Earley, Berks.
THOMAS-STANFORD, C.	Preston Manor, Brighton

ISMAY, J. H.	Iwerne Minster, Blandford
LLEWELLYN, CAPTAIN L. T. E.	Hackwood, Basingstoke
LYMINGTON, VISCOUNT,	Old Manor Farm, Ellisfield, Basingstoke
ORDE POWLETT, HON. N.A.	Bolton Hall, Leyburn, Yorkshire
WARD, R. BRUCE	Godinton, Ashford, Kent

NORTH-WESTERN DIVISION (WORCESTERSHIRE, GLOUCESTERSHIRE, HEREFORDSHIRE, MONMOUTHSHIRE AND WALES).

(10 *Representatives.*)

BEST, CAPT. W.	Vivod, Llangollen
FOX, R. A.	Yate House, Yate, Glos.
MASTERS, A.	Kyneton, Thornbury, Glos.
MASON, F. F.	Swansea
STORRAR, J. I.	Tredegar Estate Office, Newport, Mon.

ACKERS, C. P.	Huntley Manor, Glos.
ALEXANDER, HUBERT	5, High Street, Cardiff
DRUMMOND, COL. F. D. W., C.B.E.	Cawdor Estate Office, Carmarthen
PRICE, SIR F., Bart.,	Hensol Castle, Pontyclun, Glam.
SWANSEA, LORD, D.S.O. M.V.O.	Glanogwr, Bridgend, Glam.

WITHOUT REFERENCE TO DISTRICT DIVISION.

(8 *Representatives.*)

BAMFORD JOSEPH	Leighton Iron Works, Uttoxeter
DREW, W.	Albion Iron Works, Leigh Lancashire
GIBBS, COL. W. O.	Home Farm, Barrow Gurney

KINGWELL, H. J.	Bow Grange, Totnes
BEST, HON. J. W.	Hincknowle, Melplash, Dorset
KNOLLYS, C. R.	Richmond Lodge, Richmond Hill, Bath
POWLETT, A. T.	42, Milsom Street, Bath

STANDING COMMITTEES, 1925--26·

(The President is an *ex-officio* Member of all Committees.)

ALLOTMENT.

Best, Capt W., *Chairman.*

Bath, Marquis of, K.G.
Bathurst, Sir F. H., Bart., D.S.O.
Cave, E. C.
Folkestone, Viscount
Mason, F. F.
Napier, H. B.
Shelley, J. F.
Wynford, Lieut.-Col. Lord, D.S.O.

CONTRACTS.

Napier, H. B., *Chairman.*

Bath, Marquis of, K.G.
Bathurst, Sir F. H., Bart., D.S.O.
Best, Capt. W.
Daw, J. E.
Folkestone, Viscount
Mason, F. F.
Neville Grenville, R.
Rawlence, G.N.

DAIRY.

Somerville, A. F., *Chairman.*

Ashcroft, W.
Clive, Captain E. A. B.
Gibbs, Major A. H.
Gibson, J. T.
Hurle, J. C.
Knight, S. J.
Llewellyn, Capt. L.T.E.
Miles Sir C., Bart
Neville Grenville, R.
Rawlence, G. N.
Strachie, Lord
Tudway, C. C.
Voelcker, Dr. J. A., M.A.
White, A. R., O.B.E.

DISQUALIFYING.

The Stewards of Live Stock and Produce.

EXPERIMENTS AND EDUCATION.

Lord Bledisloe, K.B.E., *Chairman.*

Ackers, C. P.
Ashcroft, W.
Benyon, J. H.
Gibson, J. T.
Hanley, Dr. J. A.
Hobhouse, A. L.
Hurle, J. C.
Ismay, J. H.
Lipscomb, G.
Napier, H. B.
Penberthy, Prof. J., F.R.C.V.S.
Powlett, A. T.
Rawlence, E. A.
Somerville, A. F.
Sutton, E. P. F.
Voelcker, Dr.J.A.,M.A.
Wallace, Capt. T., M.Sc., M.C.

(With power to add to their number.)

FINANCE.

Napier, H. B., *Chairman.*

Daw, J. E.
Gibbs, Major A. H.

FORESTRY.

Lipscomb, G., *Chairman.*

Ackers, C. P.
Bledisloe, Lord, K.B.E.
Clinton, Lord
Drummond, Col. F. D. W. C.B.E.
Folkestone, Viscount
Hoare, Sir H. H. A., Bart.
Napier, H.B.
Orde Powlett, Hon. N. A.

IMPLEMENT REGULATIONS.

Bath, Marquis of, K.G., *Chairman*.

Bamford J.
Bathurst, Sir F. H., Bart., D.S.O.
Best, Capt. W.
Drew, W.
Folkestone, Viscount
Martyn, G.
Mason, F. F.
Moore-Stevens, Col. R. A.
Napier, H. B.
Neville Grenville, R.

JOURNAL.

Chairman.

Acland, Rt. Hon. F. D.
Bledisloe, Lord, K.B.E.
Hurle, J. C.

JUDGES' SELECTION.

Wynford, Lieut.-Col. Lord, D.S.O., *Chairman*.

Alexander, Hubert
Bathurst, Sir F. H., Bart, D.S.O.
Gordon, G.
Hoare, Sir H.H.A., Bart.
Mason, F. F.
Miles Sir C., Bart.
Moore-Stevens, Col. R. A.
Napier, H. B.
Shaw, Col. F. S. Kennedy
Shelley, J. F.
Storrar, J. I.

RAILWAY ARRANGEMENTS AND ADVERTISEMENTS.

Bath, Marquis of, K.G.
Bledisloe, Lord, K.B.E.
Mason, F. F.

(With power to add to their number.)

SCIENCE AND ART.

Bath, Marquis of, K.G., *Chairman*.

Acland, Rt. Hon., F. D.
Bledisloe, Lord, K.B.E.
Cundall, H. M. (I.S.O., F.S.A.)
Daw, J. E.
Farwell, Major E. W.
Lipscomb, G.
Llewelyn, Sir J. T. D., Bart.
Napier, H. B.

(With power to add to their number.)

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The Chairmen of all other Committees.

SHOW PLACE AND DATE.

Chairman of the Allotment, Contracts, Dairy, Finance, Forestry, Implement Regulations, Railway Arrangements, Science and Art, and Stock Prize Sheet Committees.
(With power to add two Local Members to their number.)

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Bathurst, Sir F. H., Bart., D.S.O.
Bruford, R.
Buckingham, Rev. Preb.
Gibbs, Major A. H.
Hoare, Sir H. H. A., Bart.
Kingwell, H. J.
Mason, F. F.
Miles, Lieut.-Col. Sir C., Bart
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Shaw, Col. F. S. Kennedy
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Storrar, J. I.
Sutton, E. P. F.
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Bath, Marquis of, K.G.
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Best, Capt. W.

Chairman.
Folkestone, Viscount.
Mason, F. F.
Napier, H. B.

Stewards.

Cattle, Sheep and Pigs.
Miles, Lieut.-Col. Sir C., Bart.
Shelley, J. F.
Storrar, J. I.

Cider.
Farwell, Major E. W.

Dairy.
Somerville, A. F.
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Experiments.
Ackers, C. P.

Finance.
Napier, H. B.
Daw, J. E. Gibbs, Major A. H.

Forage.
Kingwell, H. J.

Forestry.
Lipscomb, G.

Horses.
Wynford, Lieut.-Col. Lord, D.S.O.
Hoare, Sir H. H. A., Bart.
Alexander, Hubert.

Horticulture.
Boscawen, Rev. A. T.

Music.
Cundall, H. M. (I.S.O., F.S.A.).

Poultry.
Bruford, R.

Science and Art.
Cundall, H. M. (I.S.O., F.S.A.)

Shoeing.
Mason, F. F.

Yard.
Bath, Marquis of, K.G.
Bathurst, Sir F. H., Bart., D.S.O.
Best, Capt. W.
Folkestone, Viscount.

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Dauntsey School Foundation—White, A. R., O.B.E.
National Fruit and Cider Institute—Napier, H. B., Ackers, C. P.
Sugar Beet Growers' Society—Alexander, Hubert.
South Eastern Agricultural College, Wye—Ashcroft, W.
Dairy Research Committee of University College, Reading—Somerville, A. F.
Agricultural Education Committee of Wilts County Council—White, A. R., O.B.E.
Bristol University Sub-Committee—Lipscomb, G.

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Veterinary Inspector.
Penberthy, Prof. J. (F.R.C.V.S.).

Superintendent of Works.
Ayre, H. C

ANNUAL EXHIBITIONS.

Year.	Place Visited.	Local Subscription.	Prizes.			Total Local Contribution.	President.	Admissions.		
			Local Committee.	Local Societies.	Local Residents.			On 2/6 Days.	On 1/- Days.	Total.
		£	£	£	£	£				
1853	Plymouth	450	..	..	..	450	Sir T. D. Acland, Bart.	..	..	..
1854	Bath	450	..	..	..	450	William Miles, M.P.	..	..	..
1855	Tiverton	450	..	..	..	450	Earl Fortescue	..	..	..
1856	Yeovil	450	..	..	..	450	C. A. Moody, M.P.	..	..	..
1857	Newton Abbot	700	..	..	..	700	Lord Courtenay	..	..	..
1858	Cardiff	800	..	..	..	800	Lord Courtenay	..	..	..
1859	Barnstaple	800	85	..	81	966	John Sillifant	..	..	..
1860	Dorchester	900	..	..	..	900	Lord Rivers	10,709	11,949	22,658
1861	Truro	900	..	..	..	900	J. W. Buller, M.P.	15,201	14,220	29,421
1862	Wells	900	..	..	..	900	Sir T. D. Acland, Bart.	10,578	4,775	15,353
1863	Exeter	900	..	..	..	900	Marquis of Bath	15,635	19,284	34,919
1864	Bristol	1000	106	..	50	1156	Earl Fortescue	22,377	65,678	88,055
1865	Hereford	900	358	..	..	1258	Lord Taunton	16,575	35,261	51,836
1866	Salisbury	900	57	..	..	957	Earl of Portsmouth	7,288	18,737	26,025
1867	Salisbury	..					J. Tremayne	7,502	16,702	24,204
1868	Falmouth	900	..	..	..	900	Sir J. T. B. Duckworth, Bart.	11,393	19,495	30,888
1869	Southampton	900	132	..	18	1050	Earl of Carnarvon	15,340	41,290	56,630
1870	Taunton	900	..	..	..	900	Sir S. H. Northcote, Bart., C.B., M.P.	17,952	33,653	51,605
1871	Guildford	900	110	..	..	1010	Earl of Cork	10,656	23,406	34,062
1872	Dorchester	800	..	..	10	810	Duke of Marlborough, K.G.	12,791	21,517	34,308
1873	Plymouth	800	..	400	..	1200	Earl of Mount-Edgcumbe	16,665	45,744	62,409
1874	Bristol	800	403	..	..	1203	Sir Massey Lopes, Bart., M.P.	37,329	72,791	110,120
1875	Croydon	800	245	..	..	1045	R. Benyon, M.P.	14,518	26,028	40,546
1876	Hereford	800	381	..	..	1181	Earl of Ducie	16,396	32,645	49,041
1877	Bath	800	215	..	..	1015	Marquis of Lansdowne	27,625	48,852	76,477
1878	Oxford	800	..	170	6	976	Earl of Jersey	12,414	26,995	39,409
1879	Exeter	800	..	..	10	810	Earl of Morley	14,634	40,533	55,167

ANNUAL EXHIBITIONS—*continued.*

Year.	Place Visited.	Local Subscription.	Prizes.			Total Local Contribution	President.	Admissions.			
			Local Committee.	Local Societies.	Local Residents.			On 5/- Day.	On 2/6 Days	On 1/- Days.	Total.
		£	£	£	£	£					
1880	Worcester	800	..	254	..	1054	Earl of Coventry	..	8,415	37,675	46.090
1881	Tunbridge Wells	800	245	34	..	1079	Marquis of Abergavenny	..	13.368	33.236	46,604
1882	Cardiff	800	200	198	17	1215	Lord Tredegar	..	23.941	38,680	62,621
1883	Bridgwater	800	78	..	..	878	Lord Brooke, M.P.	..	17.171	31.241	48,412
1884	Maidstone	800	310	33	75	1218	Viscount Holmesdale	..	13.501	31.053	44,554
1885	Brighton	800	227	33	82	1142	Viscount Hampden	..	9.637	39,851	49,488
1886	Bristol	800	525	..	..	1325	Lord Carlingford	..	29,580	70,999	100,579
1887	Dorchester	800	..	112	..	912	Earl of Ilchester	..	8.860	29.846	38,706
1888	Newport (Mon.)	800	100	..	..	900	Lord Tredegar	..	14.878	38.567	53,445
1889	Exeter	800	..	..	10	810	Lord Clinton	..	16.405	36.195	52,600
1890	Rochester	800	294	..	26	1120	Earl of Darnley	..	3.480	48.314	51,794
1891	Bath	800	50	103	100	1053	Earl Temple	..	23.510	52,185	75,695
1892	Swansea	800	200	100	10	1110	Sir J. D. T. Llewellyn, Bart.	..	18.364	54.609	72,973
1893	Gloucester	800	400	..	..	1200	Lord Fitzhardinge	..	14,272	40.368	54,640
1894	Guildford	800	174	..	10	984	Earl of Onslow	..	8.671	29,813	38,484
1895	Taunton	800	85	160	10	1055	Viscount Portman	..	13.181	30,111	43.292
1896	St. Albans	800	152	..	..	952	Earl of Clarendon	..	12.056	22,380	34.436
1897	Southampton	800	50	..	..	850	Lord Montagu of Beaulieu	..	8.284	33,750	42.034
1898	Cardiff	800	200	..	..	1000	Lord Windsor	..	13.101	42.501	55.602
1899	Exeter	800	..	225	5	1030	Lord Clinton	..	16.091	39,832	55,923
1900	Bath	800	100	150	10	1060	Marquis of Bath	954	11.601	36.814	49,369
1901	Croydon	800	115	..	..	915	H.R.H. The Duke of Cornwall and York, K.G.	1,196	9.362	30.693	41.251
1902	Plymouth	800	105	100	36	1041	Earl of Morley	842	12,629	40.565	54,036
1903	Bristol	800	434	50	61	1345	Duke of Beaufort	..	34.528	74.352	108,880
1904	Swansea	800	350	..	..	1150	Lord Windsor	..	28.265	50.562	78,827
1905	Nottingham	800	..	218	..	1018	Duke of Portland, K.G.	..	8.913	45.964	54.877

Annual Exhibitions—*continued.*

Year.	Place Visited.	Local Subscription.	Prizes.			Total Local Contribution.	President.	Admissions.				
			Local Committee.	Local Societies.	Local Residents.			On 5/- Day.	On 2/6 Days.	On 3/- Days.	On 1/ Days.	Total.
		£	£	£	£	£						
1906	Swindon	800	..	200	50	1050	Earl of Radnor	..	7,838		42,013	49,851
1907	Newport (Mon.)	800	201	51	29	1081	H.R.H. The Prince of Wales, K.G.	..	16,236		37,819	54,055
1908	Dorchester	800	100	25	..	925	Lord Digby	..	12,227		20,350	32,577
1909	Exeter	800	..	100	..	900	Lord Clinton	..	14,898		41,891	56,789
1910	Rochester and Chatham	800	117	..	..	917	Earl of Darnley	..	5,892		20,105	25,997
1911	Cardiff	800	195	110	10	1115	Marquis of Bute	..	16,213		40,588	56,801
1912	Bath	800	100	100	..	1000	Marquis of Bath	..	13,843		40,935	54,786
1913	Truro	800	35	115	39	918	Viscount Falmouth	..	12,918		44,700	57,618
1914	Swansea	800	301	..	..	1101	Sir J. T. D. Llewelyn, Bart.	..	17,957		67,805	85 762
1915	Worcester	400	..	257	..	657	The Earl of Coventry	..	7,760		28.013	35,773
1916 to 1919	No Shows						The Earl of Coventry					
1920	Salisbury	800	24	105	131	1060	The Earl of Radnor	..	4/- 19,392		2/- 25,255	44,647
1921	Bristol	800	1000	354	..	2154	The Lord Bledisloe, K.B.E.	5105	36,068		58,473	99,646
1922	Plymouth	800	132	281	..	1213	H.R.H. The Prince of Wales, K.G.	4124	19,289	20,558	34,856	58,269
1923	Swansea	800	295		200	1295	H.R.H. The Prince of Wales, K.G.	434	12,286		78,162	115,345
1924	Taunton	800	29	100	..	929	Sir Dennis F. Boles, Bart. C.B.E., D.L.					
1925	Maidstone	800	122	100	..	1022	Col. F. S. W. Cornwallis, C.B.E., D.L.	2267	9,693	17,882	16,121	45,963
1926	Watford	800	28	171		999	The Earl of Clarendon	2019	3,618	7,206	25,653	38,496

MEMBERS' PRIVILEGES.

ANALYSES OF FERTILISERS, FEEDING STUFFS, WATERS, SOILS, &c.

Applicable only to the case of Persons who are not commercially engaged in the manufacture or sale of any substance sent for Analysis).

Members of the Bath and West and Southern Counties Society, who may also be Members of other Agricultural Societies, are particularly requested in applying for Analyses, to state that they do so as Members of the first-named Society.

THE following are the rates of charges for Chemical Analyses to Members of the Society.

These privileges are applicable only when the analyses are for *bona-fide* agricultural purposes, and are required by Members of the Society for their own use and guidance in respect of farms or land in their own occupation and within the United Kingdom.

The analyses are given on the understanding that they are required for the individual and sole benefit of the Member applying for them, and must not be used for other persons, or for commercial purposes.

Land or estate agents, bailiffs, and others, when forwarding samples are required to state the names of those Members on whose behalf they apply.

Members are also allowed to send for analysis under these privileges, any manures or feeding-stuffs to be used by their outgoing tenants, or which are to be given free of cost to their occupying tenants.

The analyses and reports may not be communicated to either vendor or manufacturer, except in cases of dispute.

Members are requested, when applying for an analysis, to quote the number in the subjoined schedule under which they wish it to be made.

No.		
1.	An opinion of the purity of bone-dust or oil-cake (each sample)	2s. 6d.
2.	An analysis of sulphate or muriate of ammonia, or of nitrate of soda, together with an opinion as to whether it be worth the price charged	5s.
3.	An analysis of guano, showing the proportion of moisture, organic matter, sand, phosphate of lime, alkaline salts and ammonia, together with an opinion as to whether it be worth the price charged	10s.
4.	An analysis of mineral superphosphate of lime for soluble phosphates only, together with an opinion as to whether it be worth the price charged	5s.
5.	An analysis of superphosphate of lime, dissolved bones, etc., showing the proportions of moisture, organic matter, sand, soluble and insoluble phosphates, sulphate of lime and ammonia, together with an opinion as to whether it be worth the price charged	10s.
6.	An analysis of bone-dust, basic slag, or any other ordinary artificial manure, together with an opinion as to whether it be worth the price charged	10s.
7.	An analysis of compound artificial manures, animal products, refuse substances used for manure, etc.	from 10s. to £1
8.	An analysis of limestone, showing the proportion of lime	7s. 6d.
9.	An analysis of limestone, showing the proportion of lime and magnesia	10s.
10.	An analysis of limestone or marls, showing the proportion of carbonate, phosphate, and sulphate of lime and magnesia, with sand and clay	10s.
11.	Partial analysis of a soil, including determinations of clay, sand, organic matter, and carbonate of lime	£1
12.	Complete analysis of a soil	£3
13.	An analysis of oil-cake or other substances used for feeding purposes, showing the proportion of moisture, oil, mineral matter, albuminous matter, and woody fibre as well as of starch, gum, and sugar in the aggregate; and an opinion of its feeding and fattening or milk-producing properties	10s.
14.	Analysis of any vegetable product	10s.
15.	Determination of the "hardness" of a sample of water before and after boiling	5s.
16.	Analysis of water of land-drainage, and of water used for irrigation	£1
17.	Analysis of water used for domestic purposes	£1 10s.
18.	An analysis of milk (to assist Members in the management of their Dairies and Herds, *bona-fide* for their own information and not for trade purposes, nor for use in connection with the Sales of Food and Drugs Acts)	5s.
19.	Personal consultation with the Consulting Chemist. (To prevent disappointment it is suggested that Members desiring to hold a consultation with the Consulting Chemist should write to make an appointment)	5s.
20.	Consultation by letter	5s.
21.	Consultation necessitating the writing of three or more letters	10s.

Members wishing to excercise their privileges on the above-named terms, should forward their samples for examination *by post or parcel prepaid*, to the Consulting Chemist, DR. JOHN AUGUSTUS VOELCKER, M.A., F.I.C., Stuart House, 1, Tudor Street, London, E.C.

The fees for analysis must be sent to the Consulting Chemist at the time of application.

GUIDE TO PURCHASERS OF FERTILIZERS AND FEEDING STUFFS.

Purchasers are recommended in every case to insist upon having an *Invoice* given to them. This invoice should set out clearly :—

In the case of **Fertilisers**—

(1) The **name** of the fertiliser ;
(2) Whether the fertiliser be artificially **compounded** or not ;
(3) The **analysis** guaranteed in respect of the principal fertilising ingredients.

In the case of **Feeding-Stuffs**—

(1) The **name** of the article ;
(2) The **description** of the article ; whether it has been made from one substance or seed only, or from more than one ;
(3) The **analysis** guaranteed in respect of Oil and Albuminoids.

NOTE.—The use of terms "Linseed-cake," "Cotton-cake," etc., implies that these cakes shall be "pure," and purchasers are recommended to insist upon these terms being used without any qualification, such as "95 per cent.," "as imported," etc. "Oil-cake" should be avoided.

Members of the Society should see that the **Invoices** agree accurately with the orders given by them, and, in giving these orders, they should stipulate that the goods come up to the guarantee set out in the following list, and that they be sold **subject to the analysis and report of the Consulting Chemist of the Bath and West and Southern Counties Society.**

FERTILISERS.

Raw Bones, Bone-meal, or **Bone-dust** to be guaranteed "PURE," and to contain not less than 45 per cent. of Phosphate of Lime, and not less than 4 per cent. of Ammonia.

Steamed or "Degelatinised" Bones to be guaranteed "PURE," and to contain not less than 55 per cent. of Phosphate of Lime, and not less than 1 per cent. of Ammonia.

Mineral Superphosphate of Lime to be guaranteed to contain a certain percentage of "Soluble Phosphate." (From 25 to 28 per cent. of Soluble Phosphate is an ordinarily good quality.)

Dissolved Bones to be guaranteed to be "made from raw bone and acid only." and to be sold as containing stated percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia.

Compound Artificial Manures, Bone Manures, Bone Compounds, etc., to be sold by analysis stating the percentages of Soluble Phosphate, Insoluble Phosphates and Ammonia contained.

Basic Slag to be guaranteed to contain a certain percentage of Phosphoric Acid and to be sufficiently finely ground that 80 to 90 per cent. passes through a sieve having 10,000 meshes to the square inch.

Peruvian Guano to be described by that name, and to be sold by analysis stating the percentages of Phosphates and Ammonia.

Sulphate of Ammonia to be guaranteed to be "PURE," and to contain not less than 24 per cent. of Ammonia.

Nitrate of Soda to be guaranteed to be "PURE," and to contain 95 per cent. of Nitrate of Soda.

FEEDING-STUFFS.

Linseed Cake, Cotton Cake (Decorticated and Undecorticated), and **Rape Cake** (for feeding purposes) to be pure, *i.e.*, prepared *only* from one kind of seed from which their name is derived, and to be in sound condition. The report of the Consulting Chemist of the Bath and West and Southern Counties Society to be conclusive as to the " purity " or otherwise of any feeding-stuffs. The percentages of Oil and Albuminoids must also be guaranteed.

Mixed Feeding Cakes, Meals, etc., to be sold on a guaranteed analysis.

All Feeding-Stuffs to be sold in sound condition, and to contain nothing of an injurious nature or worthless for feeding purposes.

INSTRUCTIONS FOR SELECTING AND SENDING SAMPLES FOR ANALYSIS.

GENERAL RULES.

1. A sample taken for analysis should be fairly *representative of the bulk* from which it has been drawn.

2. The sample should reach the Analyst *in the same condition* as it was at the time when drawn.

FERTILISERS.

When Fertilisers are delivered in bags, select four or five of these from the bulk, and either turn them out on a floor and rapidly mix their contents, or else drive a shovel into each bag and draw out from as near the centre as possible a couple of shovelfuls of the manure, and mix these quickly on a floor.

Halve the heap obtained in either of these ways, take one-half (rejecting the other) and mix again rapidly, flattening down with the shovel any lumps that appear. Repeat this operation until at last only some three or four pounds are left.

From this fill three tins, holding from ½lb. to 1lb. each, mark, fasten up and seal each of these. Send one for analysis, and retain the others for reference.

Or—the manure may be put into glass bottles provided with well-fitting corks, the bottles should be labelled and the corks sealed down. The sample sent for analysis can be packed in a wooden box and sent by post or rail.

When manures are delivered in bulk, portions should be successively drawn from *different parts* of the bulk, the heap being turned over now and again. The portions drawn should be thoroughly mixed, sub-divided, and, finally, samples should be taken as before, except that when the manure is coarse and bulky it is advisable to send larger samples than when it is in a finely-divided condition.

FEEDING-STUFFS.

Linseed, Cotton, and other Feeding Cakes.—If a single cake be taken, three strips should be broken off right across the cake and from the middle portion of it, one piece to be sent for analysis, and the other two retained for reference. Each of the three pieces should be marked, wrapped in paper, fastened up and sealed. The piece forwarded for analysis can be sent by post or rail.

A more satisfactory plan is to select four to six cakes from different parts of the delivery, then break off a piece about four inches wide from the middle of each cake, and pass these pieces through a cake-breaker. The broken cake should then be well mixed, and three samples of about 1lb. each should be taken and put in tins or bags duly marked, fastened, and sealed as before. One of these lots should be sent for analysis, the remaining two being kept for reference. It is advisable also, with the broken pieces, to send a small strip from an unbroken cake.

Feeding Meals, Grain, etc.—Handfuls should be drawn from the centre of half-a-dozen different bags of the delivery; these lots should then be well mixed, and three ½lb. tins or bags filled from the heap, each being marked, fastened up, and sealed. One sample is to be forwarded for analysis and the others retained for reference.

SOILS, WATERS, &c.

Soils.—Have a wooden box made, 6 inches in length and width, and from 9 to 12 inches deep, according to the depth of soil and subsoil of the field. Mark out in the field a space of about 12 inches square; dig round in a slanting direction a trench, so as to leave undisturbed a block of soil and its subsoil 9 to 12 inches deep; trim this block to make it fit into the wooden box, invert the open box over it, press down firmly, then pass a spade under the box and lift it up gently, turn over the box, nail on the lid, and send by rail. The soil will then be received in the position in which it is found in the field.

In the case of very light, sandy, and porous soils, the wooden box may be at once inverted over the soil and forced down by pressure, and then dug out.

Waters.—Samples of water are best sent in glass stoppered Winchester bottles holding half a gallon. One such bottle is sufficient for a single sample. Care should be taken to have these scrupulously clean. In taking a sample of water for analysis it is advisable to reject the first portion drawn or pumped, so as to obtain a sample of the water when in ordinary flow. The bottle should be rinsed out with the water that is to be analysed, and it should be filled nearly to the top. The stopper should be secured with string, or be tied over with linen or soft leather. The sample can then be sent carefully packed either in a wooden box with sawdust, etc., or in a hamper with straw.

Milk.—A pint bottle should be sent in a wooden box.

GENERAL INSTRUCTIONS.

Time for Taking Samples.—All samples, both of fertilisers and feeding-stuffs, should be taken as soon after their delivery as possible, and should reach the Analyst within *ten days* after delivery of the article. In every case it is advisable that the Analyst's certificate be received before a fertiliser is sown or a feeding-stuff is given to stock.

Procedure in the event of the Vendor wishing Fresh Samples to be Drawn.—Should a purchaser find that the Analyst's certificate shows a fertiliser or feeding-stuff not to come up to the guarantee given him, he may inform the vendor of the result and complain accordingly. He should then send to the vendor *one* of the two samples which he has kept for reference. If, however, the vendor should demand that a fresh sample be drawn, the purchaser must allow this, and also give the vendor an opportunity of being present, either in person or through a representative whom he may appoint. In that case, three samples should be taken in the presence of both parties with the same precautions as before described, *each* of which should be duly packed up, labelled and *sealed* by both parties. One of these is to be given to the vendor, one is to be sent to the Analyst, and the third is to be kept by the purchaser for reference or future analysis if necessary.

All samples intended for the Consulting Chemist of the Society should be addressed (postage or carriage prepaid), to Dr. J. AUGUSTUS VOELCKER, M.A., F.I.C., Stuart House, 1, Tudor Street, New Bridge Street, London, E.C. Separate letters of instruction should be sent at the same time.

WATFORD MEETING,

MAY 25, 26, 27, 28 and 29, 1926.

MONEY PRIZES.

				PAGE
Horses	£1251	7	0	cxxv
Cattle	1591	15	0	cxxxii
Sheep	576	0	0	cxl
Goats	38	0	0	cxlii
Pigs	626	0	0	cxliii
Cider	60	0	0	cxlvi
Cheese	61	0	0	cxlvi
Cream Cheese, Butter and Cream	46	10	0	cxlvi
Butter-Making	38	0	0	cxlvii
Milking	11	5	0	cxlvii
Shoeing	49	5	0	cxlvii
Poultry	234	0	0	cxlix
Pigeons	28	16	0	cli
Rabbits	25	16	0	clii
	£4,637	14	0	

DONORS OF MEDALS, PLATE, Etc.

H.R.H. The Prince of Wales, K.G.
Bath and West Society
Shire Horse Society
Hunters' Improvement and National Light Horse Breeding Society
Arab Horse Society
J. C. Duffus, Esq.
R. W. Mackenzie, Esq.
Hackney Horse Society
National Pony Society
British Show Jumping Association
Shorthorn Society
Aberdeen-Angus Cattle Society
Welsh Black Cattle Society
Sussex Herd Book Society
English Aberdeen-Angus Cattle Association
British Kerry Cattle Society
Dexter Cattle Society
English Jersey Cattle Society
Lady Kathleen Hare
Southdown Sheep Society
Sir F. H. Bathurst, Bart., D.S.O.
British Goat Society
British Berkshire Society
Large Black Pig Society
National Pig Breeders' Association
Gloucestershire Old Spots Pig Society
Wessex Saddleback Pig Society
Worshipful Company of Farriers
Capewell Horse Nail Co.

DONORS OF MONEY PRIZES.

Bath and West and Southern Counties Society	£3648	13	8
Hertfordshire Agricultural Society	171	10	0
Watford Local Committee	28	7	0
Shire Horse Society (or Medal)	7	0	0
British Percheron Horse Society	20	0	0
Suffolk Horse Society	20	0	0
Arab Horse Society	22	10	0
Devon Cattle Breeders' Society	10	0	0
Morris, C., Esq.	10	0	0
South Devon Herd Book Society	15	5	0
Shorthorn Society	30	0	0
Dairy Shorthorn Association	20	0	0
Hereford Herd Book Society	20	0	0
Sussex Herd Book Society	15	0	0
British Friesian Cattle Society	75	10	0
English Aberdeen-Angus Cattle Association	20	0	0
Red Poll Cattle Society	20	0	0
Welsh Black Cattle Society	10	0	0
Meyrick, Sir Geo.	15	0	0
Ayrshire Cattle Society (The English Committee)	15	0	0
Blue Albion Cattle Society	22	13	4
English Jersey Cattle Society	10	0	0
English Guernsey Cattle Society	25	0	0
British Kerry Cattle Society	15	0	0
Dexter Cattle Society	15	0	0
Devon Longwoolled Sheep Breeders' Society	10	0	0
Kent or Romney Marsh Sheep Breeders' Association	17	0	0
Southdown Sheep Society	17	0	0
Hampshire Down Sheep Breeders' Association	39	0	0
Oxford Down Sheep Breeders' Association	10	0	0
Dorset Horn Sheep Breeders' Association	15	0	0
Suffolk Sheep Society	25	0	0
Ryeland Flock Book Society	15	0	0
Kerry Hill Flock Book Society	12	0	0
British Goat Society	15	0	0
British Berkshire Society	9	0	0
Large Black Pig Society	20	0	0
National Pig Breeders' Association (or Medals)	55	0	0
Gloucester Old Spots Pig Society	20	0	0
Wessex Saddleback Pig Society	10	0	0
Essex Pig Society	15	0	0
Long White Lop-Eared Pig Society	20	0	0
Herts and Beds Branch, N.M.F. and B.A.	29	5	0
Robinson, Mr. Norman	3	0	0
	£4.637	14	0

PRIZES.

The Prizes in Classes 34 to 39, 84 to 86, 93 and 94, 153 to 155, the Poultry Classes 69 to 82 and the Special Local Hunter and Shorthorn Prizes are offered through the Herts Agricultural Society, and are open only to Residents in the County Radius, which includes the whole of the County of Hertford and that portion of the County of Middlesex within an eleven mile radius of the Post Office at Hatfield.

An Animal can be entered in as many Classes as it is eligible for on payment of an additional fee in each Class. No additional fee is, however, payable in the case of those Prizes headed as Champion or Special Prizes.

HORSES.

Exhibitors are requested to note that Animals entered in Classes 1 to 16 must be in the Yard before 8 a.m. on Tuesday, May 25, and except the Stallions in Class 7 **(which can be removed after the Parade of Horses on the third day of the Show)** must remain in the Yard till 6 o'clock on Saturday, May 29.

SHIRE.

(Registered or eligible for registration in the Shire Horse Society's Stud Book).

Entrance Fees.—Classes 1 and 3 to 8, including Box.: Members, 25/- ; Non-Members, 50/- each entry. Class 2, Members, 5/- ; Non-Members, 10/- each entry.

Judge—J. FORSHAW, Hillside, Sutton on Trent, Newark.

Class.	First Pirze. £	Second Prize. £	Third Prize. £
1.—Mare, in-foal, or with foal at foot	15	10	3
2.—Colt or Filly Foal, produce of Mare in Class 1	5	3	
(Note.—In Class 2 Foals must be entered or they cannot compete).			
3.—Filly or Gelding, foaled in 1925	10	5	3
4.—Filly or Gelding, foaled in 1924	10	5	3
5.—Filly or Gelding, foaled in 1923	10	5	3
6.—Gelding (by a registered sire), foaled in or before 1922	10	5	3
7.—Stallion, foaled in 1924	10	5	3
8.—Colt, foaled in 1925	10	5	3

MEDALS.

Offered by the Shire Horse Society under Condition 47.

(A) A Gold Medal, or the sum of £5, for the best Mare or Filly in the Shire Horse Classes, the property of a Member of the Bath and West Society elected not less than six months previous to April 7, 1926, 5

and to the Breeder of the winner under the Condition stated, a Prize of 2

(B) A Bronze Medal for the best exhibit in Class 6, the property of a Member of the Shire Horse Society.

PERCHERONS.

Entry fees, including Box : Classes 9, 11 and 12 : Members, 25/- ; Non-Members, 50/-. Class 10, Members, 5/- ; Non-Members, 10/- each entry.

£20 towards the prizes in Classes 9 to 12 are contributed by the British Percheron Horse Society.

Judge—Captain T. L. WICKHAM BOYNTON, Burton Agnes, East Yorks.

Class.	First Prize. £	Second Prize. £	Third Prize. £
9.—Mare, in-foal, or with foal at foot	**10**	**5**	3
10.—Colt or Filly Foal, produce of Mare in Class 9 ..	**5**	3	
(Note.—In Class 10 Foals must be entered or they cannot compete).			
11.—Filly, foaled in 1924	10	5	3
12.—Filly, foaled in 1923	10	5	3

SUFFOLK.

Entry Fees, including Box : Classes 13, 15 and 16 : Members, 25/-, Non-Members, 50/-. Class 14, Members, 5/-; Non-Members, 10/- each entry.

£20 towards the prizes in Classes 13 to 16 are contributed by the Suffolk Horse Society.

Judge—E. H. PRESTON, Wood Farm, Worlingworth, Framlingham.

	First Prize. £	Second Prize. £	Third Prize. £
13.—Mare, in-foal, or with foal at foot	**10**	**5**	3
14.—Colt or Filly Foal, produce of Mare in Class 13 ..	**5**	3	
(Note.—In Class 14 Foals must be entered or they cannot compete).			
15.—Gelding (by a registered sire), foaled in or before 1922..	10	5	3
16.—Colt, Filly or Gelding, foaled in 1923 or 1924 ..	10	5	3

HUNTERS.

Entry Fees, Classes 17 and 19 to 26, including Box : Members, 25/- ; Non-Members, 50/-. Class 18, Members, 5/- ; Non-Members, 10/- each entry.

Animals entered in Classes 17 to 26 must be in the Yard before 8 a.m. on Tuesday, May 25, and must remain there till 1 p.m. on Thursday, May 27, when they must be removed from the yard.

Judge—Captain T. L. WICKHAM BOYNTON, Burton Agnes, East Yorks.

Class.	First Prize. £	Second Prize. £	Third Prize. £
17.—Mare, in-foal, or with foal at foot	15	10	3
18.—Colt or Filly Foal, produce of Mare in Class 17 ..	5	3	
(Note.—In Class 18 Foals must be entered or they cannot compete).			
19.—Filly, Colt or Gelding, foaled in 1925	10	5	3
20.—Filly, Colt or Gelding, foaled in 1924	10	5	3
21.—Filly or Gelding, foaled in 1923	10	5	3
22.—Mare or Gelding, foaled before 1923, that has not won a prize of £10 or over under saddle at any Show held previous to April 1, 1926	10	5	3

HUNTERS—Continued.

CLASS.	First Prize. £	Second Prize. £	Third Prize £
23.—MARE or GELDING, foaled in 1922	10	5	3
24.—MARE or GELDING, foaled before 1923, to carry not more than 12 stone 7 lbs..	20	10	3
25.—MARE or GELDING, foaled before 1923, to carry over 12 stone 7 lbs., and under 14 stone	20	10	3
26.—MARE or GELDING, foaled before 1923, to carry 14 stone or over	20	10	3

SPECIAL COUNTY PRIZES.

Offered by the Herts. Agricultural Society, and open only to residents in the County Radius.

	First Prize. £	Second Prize. £	Third Prize £
(C) Best Local Exhibit in Class 17	5		
(D) Best Local Exhibit in Class 22	5		

MEDALS.

Offered by the Hunters' Improvement and National Light Horse Breeding Society, under Conditions 48 and 49.

(E) A Gold Medal, or £5 and a Bronze Medal, for the best Hunter Brood Mare in Class 17, registered with a number in the Hunter Stud Book at the time of entry or within a month of the award, not having previously won the above-named Society's Gold Medal as a Brood Mare in 1926, and which must have her foal at foot, or produce a living foal in 1926 to a Thoroughbred Horse or Registered Hunter sire. In the second instance a certificate to that effect must be forwarded before the Medal is sent.

(F) A Silver Medal, or £1 (at the option of the winner), for the best Hunter Mare or Gelding of any age, exhibited in Classes 22 to 26 by a member of the Hunters' Improvement and National Light Horse Breeding Society, whose application for membership must be lodged within a month of the award.

Only Prize-winners in the Classes will be eligible for these Medals.

ARABS AND PONIES.

Animals entered in Classes 27 to 33 must be in the Yard after 6 p.m. on Thursday, May 27, and before 8 a.m. on Friday, May 28, and must remain in the Yard until 6 p.m. on Saturday, May 29.

ARABS.

Entries in Classes 27 to 29 must be registered or accepted for registration in the Arab Horse Stud Book.

£22 10s. towards the prizes in these Classes are contributed by the Arab Horse Society.

Entry Fee : 10/- each entry.

Judge—Brig.-Gen. T. R. F. BATE, Glenmonnow House, Carway, Herefordshire.

	First Prize. £	Second Prize. £	Third Prize £
27.—MARE, in-foal, or with foal at foot	10	5	3
28.—STALLION, any age	10	5	3
29.—COLT FILLY or GELDING, foaled in 1923, 1924 or 1925 ..	10	5	3

SILVER MEDALS.

Offered by the Arab Horse Society.

(G) Best Mare or Filly in Class 27 or 29.
(H) Best Stallion or Colt in Class 28 or 29.

POLO AND RIDING PONIES.

Animals entered in Classes 30 and 31 must be entered in the National Pony Stud Book or registered in the approved Mare Register.

Judge—W. G. LAMBARDE, Bradbourne Hall, Sevenoaks.

Class.	First Prize. £	Second Prize. £	Third Prize. £
30.—Mare, not exceeding 15 hands, in foal or with foal at foot	10	5	3
31.—Filly or Gelding, foaled in 1922, 1923 or 1924	10	5	3

SILVER MEDAL.

Offered by the National Pony Society.

(I) Best exhibit in Class 30.

(Note.—This Medal will not be awarded unless there is a minimum of 4 entries in the Class).

SHETLAND PONIES.

Judge—A. H. FOX BROCKBANK, The Croft, Kirksanton, Silecroft, Cumberland.

Class.	First Prize. £	Second Prize. £	Third Prize. £
32.—Mare, not exceeding 10.2 hands, in foal, or with foal at at foot	10	5	3
33.—Stallion, not exceeding 10.2 hands, foaled before 1923 ..	10	5	3

CHAMPION PRIZES.

Offered by R. W. Mackenzie, Esq., of Earlshall, Leuchars, Fife.

(J) A Silver Medal for the best exhibit in the Shetland Classes.

Offered by J. C. Duffus, Esq., of Penniwells, Elstree, Herts.

(K) A Silver Cup for the best Pony of the opposite sex to the Champion exhibited in the Shetland Classes and entered or eligible for the Shetland Pony Stud Book.

COUNTY CLASSES.

ANY AGRICULTURAL BREED.

The Prizes in Classes 34 to 39 are offered by the Herts. Agricultural Society, and are open only to residents in the County Radius.

Animals entered in Classes 34 to 39 only, must be in the Yard by 9 a.m. on Thursday, May 27, and can leave after they have been judged and paraded.

Horses entered in other Classes, can, if eligible, be also entered on payment of an additional fee, in these Classes.

Entry Fees: Members, 10/6; Non-Members, 21/- each entry.

Judge—J. FORSHAW, Hillside, Sutton-on-Trent, Newark.

Class.	First Prize. £	Second Prize. £	Third Prize. £
34.—**Gelding, any age**	**5**	**3**	**30/-**
35.—**Filly, foaled in 1923 or 1924**	**5**	**3**	**30/-**
36.—**Filly, foaled in 1925**	**5**	**3**	**30/-**
37.—**Mare with foal at foot or due to foal this season** ..	**5**	**3**	**30/-**
38.—**Foal**	**5**	**3**	**30/-**
39.—**Pair of Mares or Geldings, or Mare and Gelding**	**5**	**3**	**30/-**

SADDLE.

Horses entered in other Classes can, if eligible, be also entered on payment of an additional fee in the Saddle Classes.

Horses entered in the Saddle Classes **only**, and not having a Box in the Yard, must be in the Show Yard by 1 p.m. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as the class has been judged.

ENTRIES CLOSE.

With Boxes—April 7, *or at double fees, April* 14.

Without Boxes—At 12 *noon on the day preceding the competition.*

Entry Fees: With Box, Members, 25/-; Non-Members, 50/- each entry; Without Box: Members, 5/-; Non-Members, 10/-.

Judge—W. G. LAMBARDE, Bradbourne Hall, Sevenoaks.

Class.	First Prize. £	Second Prize. £	Third Prize. £
40.—Pony, not over 13 hands, suitable for and to be ridden by a child not over 12 years of age last birthday, on the 1st day of the Show	5	4	2
		Fourth £1.	

(A Whip will be presented to the best Boy and best Girl Riders in this Class).

Class.	First Prize. £	Second Prize. £	Third Prize. £
41.—(Novice Class)—Hack Mare or Gelding, any height, that has not won a prize of over £5 in value as a Hack at any show held previous to April 1, 1926, to be ridden on the 2nd day of the Show	10	5	2
42.—Hack Mare or Gelding, any height, to be ridden by a lady on the 3rd day of the Show	10	5	2
43.—Hack Mare or Gelding, 15 hands and over, to be ridden on the 3rd day of the Show	10	5	2
44.—Hack Mare or Gelding, under 15 hands, to be ridden on the 4th day of the Show	10	5	2
45.—Polo Pony, not over 15 hands, 4 years old and over, to be ridden on the 4th day of the Show and to be judged by a Polo Pony Judge	10	5	2
46.—Pony, not over 14 hands, suitable for and to be ridden by a child not over 14 years of age last birthday, on the 5th day of the Show	5	4	2
		Fourth £1	

(A Whip will be presented to the best Boy and best Girl Riders in this Class).

Class.	First Prize. £	Second Prize. £	Third Prize. £
47.—Mounted Police (Open).—For the best turned out Horse and Man, on the 5th day of the Show	10	5	2

Points will be given for horse, including turnout and condition, 40%; turnout of rider, 20%; and hands, seat and riding, 40%.

A Certificate must be produced at time of entry signed by the Chief Constable that the horse entered has been in the possession of the police for 3 months previous to the Show.

SILVER MEDAL.

Offered by the National Pony Society.

(L) Best exhibit in Class 45 entered or eligible for entry in the National Pony Stud Book or registered in the approved Mare Register.

HARNESS.

Horses entered in other Classes can, if eligible, be also entered on payment of an additional fee in the Harness Classes.

Horses entered in the Harness Classes only, and not having a Box in the yard, must be in the Show Yard by 1 p.m. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as the class has been judged.

ENTRIES CLOSE.

With Boxes—April 7, *or at double fees, April* 14.

Without Boxes—At 12 *noon on the day preceding the competition.*

Entry Fees: With Box, Members, 25/-; Non-Members, 50/- each entry; Without Box: Members, 5/-; Non-Members, 10/-.

Judge—A. BOWIE, Poyle Place, Colnbrook, Bucks.

CLASS.	First Prize. £	Second Prize. £	Third Prize. £	Fourth Prize. £
48.—(Novice Class). MARE or GELDING, not over 14 hands, that has not previously won a prize of over £5 in value in Single Harness at any show held previous to January 1, 1926, to be driven on the 2nd day of the Show	10	5	3	2
49.—(Novice Class). MARE or GELDING, over 14 and not over 15 hands, that has not previously won a prize of over £5 in value in Single Harness at any Show held previous to January 1, 1926, to be driven on the 2nd day of the Show	10	5	3	2
50.—(Novice Class). MARE or GELDING, over 15 hands that has not previously won a prize of over £5 in value in Single Harness at any Show held previous to January 1, 1926, to be driven on the 2nd day of the Show	10	5	3	2

LOCAL TRADESMEN.

The prizes in Classes 51, 52 and 53 are offered by the Watford Local Committee.

CLASS.	First Prize.	Second Prize.	Third Prize.	Fourth Prize.
51.—**Light Mare or Gelding, the property of a Tradesman whose place of business is within a 5-mile radius of the Watford Market Place, to be exhibited in light two-wheeled vehicle, both horse and vehicle bona fide used for purposes of his trade only for not less than three months prior to May 25, 1926, on the 2nd day of the Show ..**	**5 5 0**	**3 3 0**	**1 1 0**	
52.—**Light Mare or Gelding, ditto, ditto, to be exhibited in light four-wheeled vehicle, ditto, ditto..**	**5 5 0**	**3 3 0**	**1 1 0**	
53.—**Heavy Mare or Gelding, ditto, ditto, to be exhibited in heavy two or four-wheeled vehicle, ditto, ditto .. ..**	**5 5 0**	**3 3 0**	**1 1 0**	

In Classes 51 to 53 multiple firms who have premises in Watford but who employ their horses in London and elsewhere are not eligible to compete.

CLASS.	First Prize. £	Second Prize. £	Third Prize. £	Fourth Prize. £
54.—Pair of MARES or GELDINGS. to be driven in Double Harness on the 3rd day of the Show	15	7	3	2
55.—TANDEMS, MARES or GELDINGS, to be driven on the 3rd dav of the Show	15	7	3	2

HARNESS—Continued.

Class.		First Prize. £	Second Prize. £	Third Prize. £	Fourth Prize. £
56.—	Mare or Gelding, not exceeding 14 hands, to be driven on the 4th day of the Show	15	7	3	2
57.—	Mare or Gelding, over 14 and not exceeding 15 hands, to be driven on the 4th day of the Show	15	7	3	2
58.—	Mare or Gelding, over 15 hands, to be driven on the 5th day of the Show	15	7	3	2

MEDAL (M).

Offered by the Hackney Horse Society under Conditions No. 50.

(M) A Silver Medal for the best Mare or Gelding exhibited in Single Harness in Classes 48 to 58, to be judged on the 5th day of the Show.

JUMPING.

(Under Show Jumping Association Rules).

Horses can be entered in as many Jumping Classes as they are eligible for on payment of the entry fee for each Class, and can take Second or Third Prize in each class, but only one First Prize in Classes 59 to 63. In the event of an animal which has already won a First Prize in the aforesaid Classes being again placed First, the Animal next in point of merit will, if eligible, succeed to the First Prize, and the Stewards reserve the right to amend the Awards correspondingly, and, if necessary, to reduce proportionally the amounts paid to the other Prize Winners in the Class. The award to two or more exhibits of an equal First by the Judges, other than in the case of competitors agreeing to divide, will not debar such animals from taking a First Prize in a later class.

Horses entered in the Jumping Classes only, and not having a box in the Yard, must be in the Show Yard by 1 p.m. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as the Class has been judged. A covered shed will be provided for exhibits in these Classes.

ENTRIES CLOSE.

With Boxes—April 7, *or at double fees, April* 14.

Without Boxes—At 12 *noon on the day preceding the competition.*

Entry Fees : With Box, Members, 25/- ; Non-Members, 50/- each entry ; Without Box : Members, 5/- ; Non-Members, 10/-.

The Society reserves the right to cancel the Classes for Jumping in the event of sufficient entries not being forthcoming. In such case notice will be given to Exhibitors, and any Entry Fee paid will be returned.

(For Regulations as to Jumping Classes see Conditions 51).

Judge—Lieut.-Colonel Lord WYNFORD, D.S.O., Wynford House, Maiden Newton, Dorchester.

Class.		First Prize. £	Second Prize. £	Third Prize. £	Fourth Prize. £
59.—	Mare or Gelding, over 15 hands, that shall jump over the course in the best form on the 1st day of the Show	10	5	3	2
60.—	Mare or Gelding, 15 hands and under, ditto, 1st day	10	5	3	2

JUMPING—Continued.

Class.	First Prize. £	Second Prize. £	Third Prize. £	Fourth Prize. £
61.—MARE or GELDING, over 15 hands, that shall jump over the course in the best form on the 2nd day of the Show	10	5	3	2
62.—MARE or GELDING, 15 hands and under, ditto, 2nd day	10	5	3	2
63.—MARE or GELDING, any height, that shall jump over the course in the best form on the 3rd day of the Show	10	5	3	2
64.—MARE or GELDING, any height, that shall jump highest on the 3rd day of the Show	10	5	2	
65.—MARE or GELDING, over 15 hands, that shall jump over the course in the best form on the 4th day of the Show	10	5	3	2
66.—MARE or GELDING, 15 hands and under, ditto, 4th day	10	5	3	2
67.—MARE or GELDING, any height, that shall jump highest on the 5th day of the Show	10	5	2	

CHAMPION CLASS.

Class.	First Prize. £	Second Prize. £	Third Prize. £	Fourth Prize. £
68.—MARE or GELDING, any height, having won a Prize in Classes 59 to 67 that shall jump over the course in the best form on the 5th day of the Show	20	10	5	

(In this Class the whole of the Jumps will be raised at the discretion of the Stewards).

(In Classes 64 and 67, £1 will be added to the prizes offered, for every six inches over 5 feet cleared by the winning animals).

SPECIAL PRIZE.

Offered by the British Show Jumping Association to Members of that Association who have paid their Subscriptions for the current year.

(N) A Silver Medal to the owner of the Horse making the least number of faults in Class 68, the Horse being a prize winner in the Class and not having previously won the Medal this year.

CATTLE.

Entry Fees: Members 17/6; Non-Members, 35/- each entry.

DEVON.

Judge—J. H. CHICK, Wynford Eagle, Dorchester.

The prizes in Class 71 are offered by C. Morris, Esq.

	First Prize. £	Second Prize. £	Third Prize. £
69.—COW or HEIFER, in-Milk, calved in or before 1923 ..	10	5	2
70.—HEIFER, calved in 1924	10	5	2
71.—**Heifer, calved in 1925**	**7**	**3**	
72.—BULL, calved in or before 1924	10	5	2
73.—BULL, calved in 1925	10	5	2

CHAMPION PRIZES.

Offered by H.R.H. the Prince of Wales, K.G.

A Challenge Cup, value £30 for the best Bull exhibited in Class 72 or 73 to be won three times in succession or four times altogether before becoming the property of the winner.

Offered by the Devon Cattle Breeders' Society.

Best Animal exhibited in Classes 69 to 73 .. .. .. **10**

SOUTH DEVON.

Judge—J. H. WOODLEY, Degembris, Newlyn East, Newquay.

£10 towards the Prizes in the South Devon Classes are contributed by the South Devon Herd Book Society.

Class.	First Prize. £	Second Prize. £	Third Prize. £
74.—Cow or Heifer, in-Milk, calved in or before 1923	10	5	2
75.—Heifer, calved in 1924 or 1925	10	5	2
76.—Bull, calved in or before 1924	10	5	2
77.—Bull, calved in 1925	10	5	2

CHALLENGE CUP.

Offered by H.R.H. the Prince of Wales, K.G.

A Silver Challenge Cup for the best Cow in-Milk in the South Devon Classes, to be won three times in succession or four times altogether before becoming the property of the Winner.

SHORTHORN.

Judge—J. D. WILLIS, Stratton Park, near Swindon.

	First Prize. £	Second Prize. £	Third Prize. £
78.—Cow or Heifer, in-Milk, calved in or before 1923	10	5	2
79.—Heifer, calved in 1924	10	5	2
80.—Heifer, calved in 1925	10	5	2
81.—Bull, calved in 1922 or 1923	10	5	2
82.—Bull, calved in 1924	10	5	2
83.—Bull, calved in 1925	10	5	2

CHAMPION PRIZE.

Offered by the Shorthorn Society.

	First Prize. £	Second Prize. £	Third Prize. £
Best Bull in Classes 81 to 83 entered in, or eligible for entry in Coates's Herd Book, with Silver Medal to the Breeder	10		

COUNTY SHORTHORN CLASSES.

Open only to residents in the County Radius. Animals entered in these Classes only must be in the Yard by 9 a.m. on Thursday, May 27, and can be removed after 6 p.m. that day. Animals entered in the Open Classes can also be entered in these Classes on payment of the additional Entry Fee.

Entry Fees: Members, 10/6; Non-Members, 21/-.

	First Prize. £	Second Prize. £	Third Prize. £
84.—**Cow, calved previous to 1923, in-Milk or in-Calf, having produced a live calf**	**5**	**3**	**30/-**
85.—**Heifer, calved in 1924 or 1925**	**5**	**3**	**30/-**
86.—**Bull, any age**	**5**	**3**	**30/-**

SPECIAL DISTRICT PRIZES.

The First Prize and a Silver Medal to the Breeder are offered by the Shorthorn Society, and the Prizes will not be awarded unless 5 individual Exhibitors shall have made entries. No Bull can take more than one District Prize offered by the Shorthorn Society.

	First Prize. £	Second Prize. £	Third Prize. £
Best Bull, calved in 1925, eligible for and entered in Coates's Herd Book with a registered number or pedigree sent for such entry previous to the Show, the property of an Exhibitor residing in the District for which the prize is offered and located there from the time of entry until the Show	**10**	**5**	

DAIRY SHORTHORN.

Judge—R. HOBBS, Kelmscott, Lechlade, Glos.

The First Prizes in Classes 87 and 88 (and a Silver Medal to the Breeder of the winners) are offered by the Shorthorn Society and the First Prize in Class 92 by the Dairy Shorthorn Association.

CLASS.	First Prize. £	Second Prize. £	Third Prize. £
87.—PEDIGREE COW, in-Milk, calved in or before 1922, eligible for, and entered in Coates's Herd Book, or pedigree sent for such entry previous to the Show, and not having previously won a similar prize offered by the above-named Society in 1926, to be milked in the Ring before judging, under Conditions 59	**10**	5	2
88.—Ditto, calved in or after 1923, ditto, ditto	**10**	5	2
89.—PEDIGREE HEIFER, calved in 1924..	10	5	2
90.—PEDIGREE HEIFER, calved in 1925	10	5	2
91.—PEDIGREE BULL, calved before 1925	10	5	2
92.—PEDIGREE BULL, calved in 1925, entered or pedigree accepted for entry in Coates's Herd Book and registered or accepted for registration in the Year Book of the Dairy Shorthorn Association. (An animal having taken one of these prizes is not eligible to compete again the same year except at the R.A.S.E. Show). The Prizes will not be awarded in this Class unless there are at least 5 entries	**10**	5	2

SPECIAL PRIZE.

Offered by the Dairy Shorthorn Association.

	First Prize. £	Second Prize. £	Third Prize. £
Best Bull in Class 92 qualified in accordance with Condition No. 60	**10**		

COUNTY DAIRY SHORTHORN CLASSES

(Open only to residents in the County Radius).

Animals entered in these Classes only, must be in the Yard by 9 a.m. on Thursday, May 27, and can be removed after 6 p.m. that day. Animals entered in the Open Classes can also be entered in these Classes on payment of the additional Entry Fee.

Entry Fees: Members, 10/6; Non-Members, 21/-.

	First Prize. £	Second Prize. £	Third Prize. £
93.—**Cow, calved previous to 1923, in-Milk or in-Calf, and having produced a Live Calf**	**5**	**3**	**30/-**
94.—**Heifer, calved in 1923, in-Milk or in-Calf. Judge to have special regard to milking qualities**	**5**	**3**	**30/-**

HEREFORD.

Judge—R. MEDLICOTT, Bodenham, S.O., Leominster.

	First Prize. £	Second Prize. £	Third Prize. £
95.—COW or HEIFER, in-Milk, calved before Sept. 1, 1923 ..	10	5	2
96.—HEIFER, calved on or between September 1, 1923 and August 31, 1924	10	5	2
97.—HEIFER, calved on or after Sept. 1, 1924	10	5	2
98.—BULL, calved before Sept. 1, 1923	10	5	2
99.—BULL, calved on or between September 1, 1923, and August 31, 1924	10	5	2
100.—BULL, calved on or after Sept. 1, 1924	10	5	2

CHAMPION PRIZES.

Offered by the Hereford Herd Book Society.

	First Prize. £	Second Prize. £	Third Prize. £
Best registered Cow or Heifer in Classes 95 to 97	**10**		
Best registered Bull in Classes 98 to 100	**10**		

SUSSEX.

Judge—H. S. GREAVES. The Toll, Buxted, Sussex.

£15 towards the Prizes in the Sussex Classes and the Silver Medals are offered by the Sussex Herd Book Society.

Class.	First Prize. £	Second Prize. £	Third Prize. £
101.—**Cow or Heifer, in-Milk, calved in or before 1923**	10	5	2
102.—Heifer, calved in 1924	10	5	2
103.—Heifer, calved in 1925	10	5	2
104.—Bull, calved in or before 1925	10	5	2

SILVER MEDALS.

Best Cow or Heifer in Class 101 to 103

Best Bull in Class 104

BRITISH FRIESIAN.

Judge—S. HEATON, Iken, Tunstall, Suffolk.

£25 10s. 0d. towards the Prizes in the Friesian Classes are contributed by the British Friesian Cattle Society, and animals entered must be registered in the B.F.C.S. Herd Book proper, those registered in Supplementary Section not being eligible.

105.—Cow or Heifer, any age, in-Milk	10	5	2
106.—Heifer, not in Milk, calved in 1924	10	5	2
107.—Heifer, calved in 1925	10	5	2
108.—Bull, calved in or before 1923	10	5	2
109.—Bull, calved in 1924	10	5	2
110.—Bull, calved in 1925	10	5	2

ABERDEEN-ANGUS.

Judge—W. R. BOARD, Great Frampton, Llantwit Major, Cardiff.

£20 towards the Prizes in the Aberdeen-Angus Classes are contributed by the English Aberdeen-Angus Cattle Association.

111.—Cow or Heifer, in-Milk, calved before 1st December, 1923	10	5	2
112.—Heifer, calved on or after 1st December, 1923	10	5	2
113.—Heifer, calved on or after 1st December, 1924	10	5	2
114.—Bull, calved before 1st December, 1924	10	5	2
115.—Bull, calved on or after 1st December, 1924	10	5	2

CHAMPION PRIZES.

Offered by the Aberdeen-Angus Cattle Society.

A Silver Medal for the best Animal in Classes 111 to 115.

Offered by the English Aberdeen-Angus Cattle Association.

A Silver Medal for the best Animal of opposite sex.

CHALLENGE CUP.

Offered by the English Aberdeen-Angus Cattle Association.

The Venning Cup for the Exhibitor gaining the most points in the Aberdeen-Angus Classes on the basis of 4 points for a first prize, 3 points for a second, 2 points for a third, one point for a Reserve, 2 points for a Championship, and one point for a Reserve Championship. The Cup to be won twice in succession or three times in all before becoming the property of the Exhibitor.

RED POLL.

Judge—D. F. SMITH, Easton, Wickham Market.

£20 towards the prizes in the Red Poll Classes are contributed by the Red Poll Cattle Society.

Class.	First Prize. £	Second Prize. £	Third Prize. £
116.—Cow or Heifer, in-Milk, calved before 1924	10	5	2
117.—Heifer, calved in 1924	10	5	2
118.—Heifer, calved in 1925	10	5	2
119.—Bull, calved in or before 1924	10	5	2
120.—Bull, calved in 1925	10	5	2

WELSH BLACK.

Judge—T. G. OWEN, Penrhos Estate Office, Holyhead.

£10 towards the Prizes in the Welsh Black Classes and the Bronze Medals are contributed by the Welsh Black Cattle Society, and £15 by Sir Geo. Meyrick, and animals must be registered or eligible for registration in the Welsh Black Cattle Herd Book.

121.—Cow or Heifer, in-Milk, calved on or before November 30th, 1923	10	5	2
122.—Heifer, calved on or between December 1st, 1923 and November 30th, 1924	10	5	2
123.—Heifer, calved on or after December 1st, 1924	10	5	2
124.—Bull, calved in 1923, 1924 or 1925	10	5	2

BRONZE MEDALS.

For the best exhibit in Classes 121 to 123.

For the best exhibit in Class 124.

AYRSHIRE.

Judge—A. KIRKPATRICK, Barr, Sanquhar, Scotland.

£15 towards the Prizes in the Ayrshire Classes are contributed by the English Committee of the Ayrshire Cattle Herd Book Society, and animals entered must be registered or eligible for registration in the Society's Herd Book.

125.—Cow, in-Milk, calved in or before 1922	10	5	2
126.—Heifer, in-Milk, calved on or after January 1st, 1923	10	5	2
127.—Heifer, calved after September 1st, 1924	10	5	2

BLUE ALBION.

Judge—F. G. STEVENSON, The Manor House, Swepstone, Leicester.

£22 13s. 4d. towards the Prizes in Classes 128 to 131 are contributed by the Blue Albion Cattle Society, and only animals entered or accepted for entry in the Herd Book are eligible to compete. Animals entered or accepted for entry in the Special and Supplementary Registers are not eligible. The full Herd Book description of each animal entered must be given.

128.—Cow or Heifer, in-Milk, calved before January 1st, 1924	10	5	2
129.—Heifer, calved in 1924	10	5	2
130.—Heifer, calved in 1925	10	5	2
131.—Bull, any age	10	5	2

JERSEY.

Cows and Heifers—H. PADWICK, C.B.E., The Red House, West Ashling, Chichester.

Bulls—H. B. NAPIER, Long Ashton, Bristol.

Class.	First Prize. £	Second Prize. £	Third Prize. £
132.—Cow, in-Milk, calved before 1923	10	5	2
133.—Cow or Heifer, in-Milk, calved in 1923	10	5	2
134.—Heifer, in-Milk, calved in or since 1924	10	5	2
135.—Bull, calved before 1924	10	5	2
136.—Bull, calved in 1924	10	5	2
137.—Bull, calved in 1925	10	5	2

CHAMPION PRIZE.

Offered by the English Jersey Cattle Society.

	First Prize. £	Second Prize. £	Third Prize. £
For the Best Cow or Heifer, entered or eligible for entry in the English Jersey Herd Book, competing in the Jersey Classes	10		

GUERNSEY.

Judge—G. T. BARHAM, Sudbury Park, Wembley.

£20 towards the Prizes in the Guernsey Classes are contributed by the English Guernsey Cattle Society.

	First Prize. £	Second Prize. £	Third Prize. £
138.—Cow, in-Milk, calved before 1923	10	5	2
139.—Heifer, in-Milk, calved in 1923	10	5	2
140.—Heifer, calved in 1924	10	5	2
141.—Heifer, calved in 1925	10	5	2
142.—Bull, calved in 1922 or 1923	10	5	2
143.—Bull, calved in 1924	10	5	2
144.—Bull, calved in 1925	10	5	2

KERRY.

Judge—Brig.-General G. Ll. PALMER, Berryfield, Bradford-on-Avon.

£15 of the Prizes in Classes 145 to 148 and the Challenge Cup are contributed by the British Kerry Cattle Society.

	First Prize. £	Second Prize. £	Third Prize. £
145.—Cow or Heifer, in-Milk, calved on or before August 31st, 1923	10	5	2
146.—Heifer, not in milk, calved between August 31st, 1923, and September 1st, 1924	10	5	2
147.—Bull, calved on or before August 31st, 1924	10	5	2
148.—Bull, calved between August 31st, 1924, and September 1st, 1925	10	5	2

CHALLENGE CUP.

The "Fitzgerald" Perpetual Silver Challenge Cup, value £10 10s. for the best animal exhibited in the Kerry Classes.

DEXTER.

Judge—S. WOODIWISS, Graveleys, Great Waltham, near Chelmsford.

	First Prize. £	Second Prize. £	Third Prize. £
149.—Cow or Heifer, in-Milk, calved in or before 1923 ..	10	5	2
150.—Heifer, calved in 1924 or 1925	10	5	2
151.—Bull, calved before 1925	10	5	2

The Prizes in Class 152 are offered by the Dexter Cattle Society.

	First Prize. £	Second Prize. £	Third Prize. £
152.—Bull, calved in 1925, whose sire and dam are entered in the English Dexter or Royal Dublin Society's Herd Book	10	3	2

SPECIAL PRIZE.

Offered by the Dexter Cattle Society.

The Devonshire Challenge Cup, for the Best Animal in Classes 149 to 152, bred by Exhibitor, and entered in or eligible for the Dexter Herd Book. The Cup to be won by the same Exhibitor with different animals three years in succession before becoming his absolute property.

The Certificate of Award of the Dexter Cattle Society will be given to the owner of the winning animal on each occasion the Cup is competed for.

MILK RECORDED.

COUNTY CLASSES.

The Prizes in Classes 153 to 155 are offered by the Herts Agricultural and Herts Milk Recording Societies, and are open only to Members of the Hertfordshire Milk Recording Society. Animals entered in these Classes only must be in the Yard by 9 a.m. on Thursday, May 27th, and can be removed after 6 p.m. that day.

Entry Fees: Members, 10/6; Non-Members, 21/-.

Judge—R. HOBBS, Kelmscott, Lechlade, Glos.

Class.	First Prize. £	Second Prize. £	Third Prize. £
153.—Milk Recorded Cow, Shorthorn Type, in-Milk, or in-Calf, having produced two or more calves and which has been officially recorded under the Hertfordshire Milk Recording Society	4	2	1
154.—Milk Recorded Cow, Friesian Type, in-Milk or in-Calf, having produced two or more calves, and which has been officially recorded under the Hertfordshire Milk Recording Society.	4	2	1
155.—Milk Recorded Cow, of any other Breed, or Cross Breed, in-Milk or in-Calf, having produced two or more calves, and which has been officially recorded under the Hertfordshire Milk Recording Society, and which is not eligible to compete in Classes 153 and 154	4	2	1

Conditions.—Form No. A 56/T.L. must be furnished with the entries in Classes 153, 154 and 155. The records to be taken in the case of (*a*) daily weighers from Sunday, March 29th p.m., 1925, to Monday, March 29th a.m., 1926: and (*b*) weekly weighers from Wednesday, April 1st p.m., 1925, to Thursday, April 1st a.m., 1926.

Judging will be on the following basis:—Milk Record 50 per cent.; General appearance, shape and make of a good type of Dairy Cow, 25 per cent.; Constitution 15 per cent.; Udder 10 per cent.

Animals entered in the Breed Classes can, if eligible, be entered also, on payment of an additional fee of 10/- *for Members and* 20/- *for Non-Members, in Classes* 156 *to* 159.

MILK TEST.

(See Regulation 62).

Judge—A. F. SOMERVILLE, Dinder House, Wells, Somerset.

	First Prize. £	Second Prize. £	Third Prize £
156.—Cow, in-Milk, of any breed or cross, under 950lbs. live weight, yielding the largest quantity of milk, of normal character, containing at each time of milking not less than 3 per cent. fat, the period of lactation being taken into consideration ..	10	5	2
157.—Cow, in-Milk, of any breed or cross, 950lbs. live weight or over, ditto, ditto	10	5	2

SILVER CHALLENGE CUPS.

Offered by Lady Kathleen Hare.

For the Dexter Cow or Heifer obtaining the greatest number of points in the Milk Test Classes. The Cup to become the property of an Exhibitor winning it 3 years in succession or 5 years in all.

Offered by the British Kerry Cattle Society.

The Valencia Perpetual Silver Challenge Cup, value £15 15s., for the Kerry Cow gaining the highest number of points in the Milk Test Classes.

SPECIAL PRIZE.

Offered by the British Friesian Cattle Society to the owner of the Cow awarded the greatest number of points in Classes 156 and 157, provided such cow is a British Friesian and the exhibitor a Member of that Society **50**

BUTTER TEST.

(See Regulation 62).

Judge—A. F. SOMERVILLE, Dinder House, Wells, Somerset.

CLASS.	First Prize. £	Second Prize. £	Third Prize £
158.—Cow, of any breed or cross, under 950lbs. live weight, obtaining the greatest number of points by the practical test of the separator and churn	5	3	2
159.—Cow, of any breed or cross, 950lbs. live weight and over, ditto, ditto	5	3	2

SPECIAL PRIZES.

Offered by the respective Breed Societies.

For the South Devon Cow obtaining the best results .. .. £5 5s.

For the three Jersey Cows obtaining the best results and not less than 42 points .. .. Gold, Silver and Bronze Medals.

(Certificates of Merit will also be awarded to Jersey Cows, 4 years old and under, obtaining 30 points, and Cows over 5 years old, obtaining 35 points.)

For the Guernsey Cow obtaining the best results £5

SHEEP.

Entry Fees : Members, 15/- : Non-Members, 30/- each entry.

DEVON LONGWOOLLED.

Judge—J. H. GIBBINGS, Week, North Tawton, Devon.

£10 towards the Prizes in these Classes are contributed by the Devon Longwoolled Sheep Breeders' Society.

CLASS.	First Prize. £	Second Prize. £	Third Prize. £
160.—Shearling RAM	10	5	2
161. Pair of RAM LAMBS, dropped in 1926	10	5	2
162.—Pen of three Shearling EWES	10	5	2

KENT OR ROMNEY MARSH.

Judge—Colonel J. BODY, D.S.O., O.B.E., Wittersham Court, Wittersham, Kent.

£17 towards the Prizes in these Classes are offered by the Kent or Romney Marsh Sheep Breeders' Association.

CLASS.	First Prize. £	Second Prize. £	Third Prize. £
163.—Two Shear RAM	10	5	2
164.—Shearling RAM	10	5	2
165.—Pair of RAM LAMBS, dropped in 1926	10	5	2
166.—Pen of three Shearling EWES	10	5	2

SOUTHDOWN.

Judge—H. E. CRAWFORD, The Home Farm, Nonington, Dover.

£17 towards the Prizes in these Classes are offered by the Southdown Sheep Society.

CLASS.	First Prize. £	Second Prize. £	Third Prize. £
167.—Two Shear Ram	**10**	**5**	**2**
168.—Shearling RAM	10	5	2
169.—Pair of RAM LAMBS, dropped in 1926	10	5	2
170.—Pen of three Shearling EWES	10	5	2

SPECIAL PRIZE.

Offered by the Southdown Sheep Society, under Condition 65, subject to there being at least three competitors.

Silver Medal or £1 for the best Ram in Classes 167 and 168

HAMPSHIRE DOWN.

Judge—J. DEAN, 65, Wilton Road, Salisbury.

£17 towards the Prizes in these Classes and the Champion Prize are offered by, and the Prizes in Class 174a through, the Hampshire Down Sheep Breeders' Association.

CLASS.	First Prize. £	Second Prize. £	Third Prize. £
171.—Shearling RAM	10	5	2
172.—RAM LAMB, dropped in 1926	10	5	2
173.—Pair of RAM LAMBS, dropped in 1926	10	5	2
174.—Pen of three Shearling EWES	10	5	2
174a.—Pen of 3 Ewe Lambs, dropped in 1926	**10**	**5**	**2**

CHAMPION PRIZE.

CLASS.	First Prize. £	Second Prize. £	Third Prize. £
Best Ram, Ram Lamb, Pair or Pen, in Classes 171 to 174a	**5**		

OXFORD DOWN.

Judge—W. H. HITCH, Elkstone Manor, Elkstone, nr. Cheltenham.

	First Prize. £	Second Prize. £	Third Prize. £
175.—Shearling RAM	10	5	2
176.—Pair of RAM LAMBS, dropped in 1926	10	5	2
177.—Shearling EWE	10	5	2

The Prizes in Class 178 are offered by the Oxford Down Sheep Breeders' Association, and will be withheld until the Animals awarded the Prizes are registered in the Flock Book.

	First Prize. £	Second Prize. £	Third Prize. £
178.—Pen of two Ewe Lambs, dropped in 1926	**6**	**3**	**1**

DORSET HORN.

Judge—J. C. DAVY, Yondover, Beaminster, Dorset.

The Animals entered in Classes 179 and 181 must have been shorn bare in the year of the Show.

£15 towards the Prizes in Classes 179 to 181 are contributed by the Dorset Horn Sheep Breeders' Association.

	First Prize. £	Second Prize. £	Third Prize. £
179.—Shearling RAM	10	5	2
180.—Pair of RAM LAMBS, dropped after November 1st, 1925	10	5	2
181.—Pen of three Shearling EWES	10	5	2

SUFFOLK.

Judge—C. J. RUSH, The Grange, Newmarket.

£25 towards the Prizes in these Classes are contributed by the Suffolk Sheep Society.

	First Prize. £	Second Prize. £	Third Prize. £
182.—Shearling RAM	10	5	2
183.—Pair of RAM LAMBS, dropped in 1926	10	5	2
184.—Pen of three Shearling EWES	10	5	2
185.—Pen of three EWE LAMBS, dropped in 1926	10	5	2

CHAMPION PRIZE.

Offered by Sir F. Hervey Bathurst, Bart., D.S.O.

A Silver Cup for the best Ram, Pair or Pen, in the Suffolk Classes. The Cup to be won three years in succession before becoming the absolute property of the winner.

RYELAND.

Judge—F. J. WILLIAMS, Yatton, Aymestry, Leominster.

£15 of the Prizes in these Classes are offered by the Ryeland Sheep Society.

	First Prize. £	Second Prize. £	Third Prize. £
186.—RAM, 2 Shear and upwards	10	5	2
187.—Shearling RAM	10	5	2
188.—Pair of RAM LAMBS, dropped in 1926	10	5	2
189.—Pen of three Shearling EWES	10	5	2

KERRY HILL.

Judge—J. T. BEAVAN, Winsbury, Chirbury, Montgomery.

£12 towards the Prizes in Classes 190 to 192 are contributed by the Kerry Hill (Wales) Flock Book Society, and animals must be shown uncoloured ; the names and Flock Book number of Rams must be given.

	First Prize. £	Second Prize. £	Third Prize. £
190.—RAM, 2 Shear and upwards	10	5	2
191.—Shearling RAM	10	5	2
192.—Pen of three Shearling EWES	10	5	2

CHAMPION PRIZE.

Offered by H.R.H. The Prince of Wales, K.G.

A Challenge Cup, value £20, for the best animal exhibited in Class 191 or 192 to be won three times in succession or four times altogether before becoming the property of the Exhibitor.

GOATS.

(For Regulations see Entry Forms).

Entry Fees : Members, 7/6 ; Non-Members, 10/- each entry.

Judge—T. W. PALMER, 10, Lloyd's Avenue, London, E.C.3.

£15 towards the Prizes in these Classes are contributed through the British Goat Society.

Class.		First Prize. £	s.	Second Prize. £	s.	Third Prize. s.	d.
193.	—Female Goat, in-milk, any age, British Alpine, Toggenburg or British Toggenburg	**2**	**10**	1	10	15	0
194.	—Female Goat, in-milk, any age, Anglo Nubian	**2**	**10**	1	10	15	0
195.	—Female Goat, in-milk, any age, Any other Variety	**2**	**10**	1	10	15	0
196.	—Goatling, British Alpine, Toggenburg or British Toggenburg, over one but not exceeding two years	**2**	**10**	1	10	15	0
197.	—Goatling, any other variety, over one but not exceeding two years	**2**	**10**	1	10	15	0
198.	—Female Kid, any variety, not exceeding one year	**2**	**10**	1	10	15	0
199.	—Milking Competition for Quality (Butter Fat only), quantity and time (two milkings)	2	10	1	10	15	0
200.	—Milking Competition for Quantity and Time only (three milkings)	2	10	1	10	15	0

Special Prizes offered by the British Goat Society.

A Silver Challenge Cup and a Challenge Certificate for the Best Female Goat over two years that has borne a kid.

A Challenge Certificate for the Best Dual Purpose Goat over two years that has borne a kid.

A Bronze Medal for the Best Female Exhibit.

The Prizes awarded at this Show will also be included in the awards for the British Goat Society's "Breeder's" Perpetual Challenge Cup and "Stud Goat" Challenge Cup.

Note.—To compete for the Dual Purpose Challenge Certificate, a goat must be exhibited in one of the first three Inspection Classes, and also in the Quality Milking Competition.

PIGS.

Entry Fees : Members, 15/- ; Non-Members, 30/- each entry.

BERKSHIRE.

Judge—R. B. VINCENT, Manor Farm, Waterston, Dorchester, Dorset.

£9 towards the Prizes in these Classes are contributed by the British Berkshire Society, and ages are calculated to May 25, 1926.

CLASS.	First Prize. £	Second Prize. £	Third Prize £
201.—BOAR, exceeding 18 months old	10	5	2
202.—BOAR, not exceeding 18 months old	7	4	2
203.—Breeding Sow, exceeding 18 months old	10	5	2
204.—Breeding Sow, not exceeding 18 months old	7	4	2

CHALLENGE CUPS (Value £10 10s. each).
Offered by the British Berkshire Society.

To be won twice in succession or three times in all before becoming the property of the Exhibitor.

Best Boar in Classes 201 or 202.

Best Sow in Classes 203 or 204.

A Silver Medal will be awarded to the Breeder of the prize-winning Animals.

LARGE BLACK.

Judge—Captain W. BRUCE, C.B.E., Haseley Manor, Wallingford.

£20 towards the Prizes in these Classes and the Champion Prizes are contributed by the Large Black Pig Society.

205.—BOAR, farrowed before May 1, 1925	10	5	2
206.—BOAR, not exceeding 12 months old on May 1, 1926	7	4	2
207.—BOAR, farrowed in 1926	7	4	2
208.—BREEDING Sow, farrowed before May 1, 1925	10	5	2
209.—BREEDING Sow, not exceeding 12 months old on May 1, 1926	10	5	2

CHAMPION PRIZES.

Best Animal in Classes 205 to 207 .. .. **Silver Medal.**

Best Animal in Classes 208 or 209 .. .. **Silver Medal.**

LARGE WHITE.

Judge—A. W. WHITE, Hillegom, Spalding.

£10 towards the Prizes in these Classes and the Champion Prize are offered by the National Pig Breeders' Association.

210.—BOAR, farrowed before 1926	10	5	2
211.—BOAR, farrowed in 1926	7	4	2
212.—BREEDING Sow, farrowed before 1926	10	5	2
213.—Pair of BREEDING Sows, farrowed in 1926	7	4	2

CHAMPION PRIZE.

A GOLD MEDAL or £5 for the Best Animal in Classes 210 to 213 .. 5

MIDDLE WHITE.

Judge—S. H. HART, Hammond's, Checkendon, Reading.

£15 towards the Prizes in these Classes and the Champion Prizes are offered by the National Pig Breeders' Association.

Class.	First Prize. £	Second Prize. £	Third Prize. £
214.—Boar, farrowed before 1926	10	5	2
215.—Boar, farrowed in 1926	7	4	2
216.—Breeding Sow, farrowed before 1925	10	5	2
217.—Breeding Sow, farrowed in 1925	7	4	2
218.—Pair of Breeding Sows, farrowed in 1926	7	4	2

CHAMPION PRIZES.

A GOLD MEDAL or £5 for the Best Animal in Class 214 or 215	5		
Do. Do. Classes 216 to 218	5		

TAMWORTH.

Judge—R. P. HAYNES, Deloes Green Farm, Wednesbury.

£10 towards the Prizes in these Classes and the Champion Prize are contributed by the National Pig Breeders' Association.

219.—Boar, any age	10	5	2
220.—Breeding Sow, farrowed before 1926	10	5	2
221.—Pair of Breeding Sows, farrowed in 1926	7	4	2

CHAMPION PRIZE.

A GOLD MEDAL or £5 for the best animal in Classes 219 to 221	5		

GLOUCESTERSHIRE OLD SPOTS.

Judge—W. C. MITCHELL, Henham Estate Office, Wangford, Suffolk.

£20 towards the Prizes in these Classes are contributed by the Gloucestershire Old Spots Pig Society.

222.—Boar, farrowed before 1926	10	5	2
223.—Boar, farrowed in 1926	7	4	2
224.—Breeding Sow, farrowed before 1925	10	5	2
225.—Breeding Sow, farrowed in 1925	10	5	2
226.—Pair of Breeding Sows, farrowed in 1926	7	4	2

CHAMPION PRIZES.
Offered through the Gloucestershire Old Spots Pig Society.

The Sir George Watson Challenge Cup, value £21, for the best Animal in Classes 222 to 226. (The Cup to be won three times by the same Exhibitor with different animals before becoming his own property).

The Deane-Drummond Cup, value £14 14s., for the best Boar in Class 222 or 223. (The Cup to be won twice by the same exhibitor with different animals before becoming his own property.

WESSEX SADDLEBACK.

Judge—H. C. KNAPMAN, Estate Office, Norman Court, Salisbury.

£10 towards the Prizes in these Classes and the Gold Medal are offered by the Wessex Saddleback Pig Society, and all pigs exhibited must be entered or eligible for entry in that Society's Herd Book.

227.—Boar, farrowed before 1926	10	5	2
228.—Boar, farrowed in 1926	7	4	2
229.—Breeding Sow, farrowed before 1926	10	5	2
230.—Pair of Breeding Sows, farrowed in 1926	7	4	2

GOLD MEDAL.

Value £5 5s. for the best Pig exhibited in Classes 227 to 230, and a Silver Medal to the Breeder who is not the exhibitor of the Animal winning the Gold Medal.

ESSEX.

Judge—W. HASLER, The Croft, Dunmow, Essex.

£15 towards the Prizes and the Silver Medal in these Classes are offered by the Essex Pig Society, and all Pigs exhibited must be entered or eligible for entry in that Society's Herd Book.

Class.	First Prize. £	Second Prize. £	Third Prize. £
231.—Boar, farrowed before 1926	10	5	2
232.—Boar, farrowed in 1926	7	4	2
233.—Breeding Sow, farrowed before 1926	10	5	2
234.—Pair of Breeding Sows, farrowed in 1926	7	4	2

SILVER MEDAL.

For best Pig exhibited in the Essex Pig classes.

LONG WHITE LOP-EARED.

Judge—A. A. PARTRIDGE, Morfred, Plympton, Devon.

£20 towards the Prizes in these Classes are contributed by the Long White Lop-Eared Pig Society.

235.—Boar, farrowed on or before October 1, 1925	10	5	2
236.—Boar, farrowed since October 1, 1925	7	4	2
237.—Sow, any age, in farrow, or with farrow not exceeding 8 weeks old on 1st day of Show	10	5	2
238.—Sow, farrowed since March 1, 1925	7	4	2
239.—Pair of Breeding Sows, farrowed in 1926	7	4	2

BACON PIGS.

Judge—J. ANDREASON, St. Edmundsbury Co-op. Bacon Factory, Elmswell, near Bury St. Edmunds.

240.—Pair of Pigs of any breed or first cross (the cross to be stated) between 9 score 10lbs. and 11 score 10 lbs. live weight each, best suitable for the Wiltshire cut of Bacon	7	4	2
All pigs in this class will be purchased at the current market price by the St. Edmundsbury Co-operative Bacon Factory, who will remove them from the show, kill, and cure the carcases. Additional prizes will then be awarded for the best bacon after curing	3	2	1

PRODUCE.

CIDER.

(Open to Growers and Makers).

Entry Fees: Members, 3/6; Non-Members, 6/- each entry.

Judge—R. S. WARREN, Messrs. Hill, Evans & Co., Worcester.

Cider entered in the Novice Class can also be entered in the Open Class for which it is eligible.

Class	First Prize. £	Second Prize. £	Third Prize. £
241.—Novice Class. Cask of not less than 9 and not more than 30 gallons of Cider made in 1925 by an Exhibitor who has not previously taken a first price in any public exhibition	5	3	2
242.—Cask of not less than 9 and not more than 30 gallons of Cider, made in 1925, of a specific gravity not exceeding 1.015 at 60 deg. Fahr.	5	3	2
243.—12 Quart Bottles of Cider, made in 1925, ditto.. ..	5	3	2
244.—Cask of not less than 9 and not more than 30 gallons of Cider, made in 1925	5	3	2
245.—12 Quart Bottles of Cider, made in 1925	5	3	2
246.—12 Quart Bottles of Cider, made in any year previous to 1925	5	3	2

CHEESE.

Entry Fees: Class 247. Members, 10/-; Non-Members, 20/-. Classes 248 and 249: Members, 7/6; Non-Members, 15/-.

Judge—A. TODD, British Dairy Institute, Reading.

	£	s.	£	s.	£	s.
247.—Three Cheddar Cheeses (not less than 56lbs. each) made in 1925	15	0	10	0	5	0
248.—Three Cheddar Cheeses (not over 56lbs. each), made in 1925	10	0	7	0	4	0
249.—Four Loaf or other Truckle Cheeses, made in 1925	5	0	3	0	2	0

CREAM CHEESE, BUTTER AND CREAM.

(These Classes are not open to Professional Teachers.)

Entry Fees: Members, 3/6; Non-Members, 6/-.

Judge—J. BENSON, 27, Alexandra Road, Bedford.

	First		Second		Third		Fourth	
	£	s.	£	s.	£	s.	£	s.
250.—Three Cream or other Soft Cheeses	3	0	2	0	1	0	0	10
251.—2lbs. of Fresh (or very slightly salted) Butter	4	0	3	0	2	0	1	0
252.—2lbs. of Butter, in the making of which no salt has been used, to be judged on the last day of the Show	4	0	3	0	2	0	1	0
253.—12lbs. of Keeping Butter, in a jar or crock, to be delivered to the Secretary 4 weeks before the Show	5	0	4	0	3	0	2	0
254.—Four half-pounds of Scalded Cream	3	0	2	0	1	0		

COMPETITIONS.

BUTTER-MAKING.

(*No Winner of a first prize given by this Society for Butter-making during the last 3 years is eligible to compete in Classes 255 to 257.*)

Entry Fees: Members, 3/6; Non-Members, 6/-.

Judge—Miss E. BRAY, County Council Offices, 1, Richmond Road, Exeter.

(*For Conditions and Regulations see Entry Form*).

	First Prize. £ s.	Second Prize. £ s.	Third Prize. £ s.	Fourth Prize. £ s.
255.—Novice Class. For Competitors who have not hitherto won a prize for Butter-making at the London Dairy Show or the Shows of the Royal Agricultural or Bath and West Society. On the 1st day of the Show ..	4 0	3 0	1 10	1 0
256.—For Men and Women, bona fide workers on a farm. On the 2nd day of the Show ..	4 0	3 0	1 10	1 0
257.—For Students who have been through a course of instruction in Butter-making at any County Council School, and who have not previously won a first or second prize at one of the Society's Shows. On the 3rd day of the Show	4 0	3 0	1 10	1 0
258.—For Men and Women. On the 4th day of Show	4 0	3 0	1 10	1 0
259.—For Winners of First and Second Prizes in the Butter-making Classes 255 to 258, or at any previous meeting of the Society. On the 5th day of the Show.				

1st Prize, Gold Medal.
2nd ,, Silver Medal.
3rd ,, Bronze Medal.

MILKING.

Entry Fees: 2/6 each entry.

Judge—A. TODD, British Dairy Institute, Reading.

	First Prize. £ s.	Second Prize. £ s.	Third Prize. £ s.	Fourth Prize. £ s.
260.—For Men, 18 years of age and over	2 0	1 0	0 15	
261.—For Women, 18 years of age and over	2 0	1 0	0 15	
262.—For Boys and Girls under 18 years of age ..	1 10	1 0	0 15	0 10

SHOEING.

OPEN CLASSES.

Entry Fees: Members, 3/6; Non-Members, 6/- each entry.

Judge—W. HILL, F.W.C.F., Oddicombe, Windsor Square, Exmouth.

	First Prize. £ s.	Second Prize. £ s.	Third Prize. £ s.	Fourth Prize. £ s.
263.—For Cart Horse Shoeing by Smiths. On the 4th day of the Show	4 0	3 0	2 0	1 0
264.—For Roadster Horse Shoeing by Smiths. On the 5th day of the Show	4 0	3 0	2 0	1 0

SPECIAL PRIZE.

Silver Cup offered by Messrs. William Martin, Sons & Co., "Dundyvan" Iron and Steel Works, Coatbridge, per Godwin, Warren & Co., Ltd., Bristol.

For the Best Competitor in Classes 263 and 264.

SHOEING—Continued.

COUNTY CLASSES.

Entrance Fee, 1/-.

The Prizes in Classes 265 to 270 are offered by the Herts and Beds Branch, N.M.F. and B.A. The Competitions are under the direction of the Agricultural Education Sub-Committee of the Herts County Council, and are open only to persons who shall have attended lectures on Farriery arranged by the County Council at various centres in the County.

Class.		First Prize. £	s.	Second Prize. £	s.	Third Prize. £	s.	Fourth Prize. £.	s.
265.—	**For Cart Horse Shoeing by Competitors who have not previously won a 1st Prize, on the 3rd day of the Show**	2	0	1	10	1	0	0	10
266.—	**For Roadster Horse Shoeing, ditto, on the 3rd day of the Show**	2	0	1	10	1	0	0	10
267.—	**For Shoemaking or Turning by Men, 20 years of age and over, who have never won a First Prize. On the 5th day of the Show**	1	10	1	0	0	15	0	10
268.	**For Shoemaking or Turning by Youths not exceeding 20 years of age on the 5th day of the Show**	1	0	0	15	0	10	0	5

CHAMPION CLASSES.

Open to Residents in the County Radius who have previously won First Prizes for Shoeing.

Class.		First Prize. £	s.	Second Prize. £	s.	Third Prize. £	s.	Fourth Prize. £.	s.
269.—	**For Cart Horse Shoeing. On the 4th day of the Show**	3	0	2	0	1	0	0	10
270.—	**For Roadster Horse Shoeing. On the 4th day of the Show**	3	0	2	0	1	0	0	10

SPECIAL PRIZES.

A Silver Challenge Cup will be awarded to the winner of the First Prize in Class 270 and Medals to the winners of the First Prizes in Classes 263 to 270.

POULTRY.

Entry Fees: Class 1, Members, 3/-; Non-Members, 5/-; Classes 2 to 68, Members, 2/-; Non-Members, 3/-; Classes 69 to 82, Members, 1/6; Non-Members, 2/6; each entry.

Judges—H. S. ANTHONY, Home Farm, Enston, Chorley (Classes 1 to 28, 47 to 50 and 69 to 76); and C. WATSON, Oxhey, Watford (Classes 1, 29 to 46, 51 to 68 and 77 to 82).

The Birds in Classes 1 *to* 44 *and* 67 *to* 80 *must have been hatched previous to January* 1*st*, 1926.

CLASS.		First Prize.		Second Prize.		Third Prize.	
		£	s.	£	s.	£	s.
1.	—Any Two Pure Breeds, best mated to cross for producing Table Poultry.—Cock and 3 Hens, bred in 1924 or 1925, the property of one Exhibitor	3	0	2	0	1	0
2.	—COCHIN or BRAHMA—Cock	1	10	1	0	0	10
3.	—Ditto—Hen	1	10	1	0	0	10
4.	—PLYMOUTH ROCK (Barred)—Cock	1	10	1	0	0	10
5.	—Ditto—Hen	1	10	1	0	0	10
6.	—Ditto (Any other variety)—Cock	1	10	1	0	0	10
7.	—Ditto—Hen	1	10	1	0	0	10
8.	—ORPINGTON—(Any variety)—Cock	1	10	1	0	0	10
9.	—Ditto—Hen	1	10	1	0	0	10
10.	—BARNVELDER—Cock	1	10	1	0	0	10
11.	—Ditto—Hen	1	10	1	0	0	10
12.	—MINORCA—Cock	1	10	1	0	0	10
13.	—Ditto—Hen	1	10	1	0	0	10
14.	—RHODE ISLAND RED—Cock	1	10	1	0	0	10
15.	—Ditto—Hen	1	10	1	0	0	10
16.	—SUSSEX (Light)—Cock	1	10	1	0	0	10
17.	—Ditto—Hen	1	10	1	0	0	10
18.	—SUSSEX (Speckled)—Cock	1	10	1	0	0	10
19.	—Ditto—Hen	1	10	1	0	0	10
20.	—SUSSEX (Any other variety)—Cock	1	10	1	0	0	10
21.	—Ditto—Hen	1	10	1	0	0	10
22.	—DORKING (Any variety)—Cock	1	10	1	0	0	10
23.	—Ditto—Hen	1	10	1	0	0	10
24.	—LANGSHAN—Cock or Hen	1	10	1	0	0	10
25.	—WYANDOTTE (White)—Cock	1	10	1	0	0	10
26.	—Ditto—Hen	1	10	1	0	0	10
27.	—Ditto (Any other variety)—Cock	1	10	1	0	0	10
28.	—Ditto—Hen	1	10	1	0	0	10
29.	—LEGHORN (White)—Cock	1	10	1	0	0	10
30.	—Ditto—Hen	1	10	1	0	0	10
31.	—Ditto (Any other colour)—Cock	1	10	1	0	0	10
32.	—Ditto—Hen	1	10	1	0	0	10
33.	—HAMBURG (Any variety)—Cock or Hen	1	10	1	0	0	10
34.	—CAMPINE—Cock or Hen	1	10	1	0	0	10
35.	—OLD ENGLISH GAME (Black Red, Wheaton or Partridge)—Cock	1	10	1	0	0	10
36.	—Ditto—Hen	1	10	1	0	0	10
37.	—Ditto (Any other colour)—Cock	1	10	1	0	0	10
38.	—Ditto—Hen	1	10	1	0	0	10
39.	—INDIAN GAME—Cock	1	10	1	0	0	10
40.	—Ditto—Hen	1	10	1	0	0	10
41.	—FRENCH (including Faverolles)—Cock	1	10	1	0	0	10

POULTRY—Continued.

	First Prize £	First Prize s.	Second Prize £	Second Prize s.	Third Prize £	Third Prize s.
42.—French (including Faverolles)—Hen	1	10	1	0	0	10
43.—Ancona—Cock	1	10	1	0	0	10
44.—Ditto—Hen	1	10	1	0	0	10
45.—Any Other Distinct Breed not previously mentioned (excluding Bantams)—Cock	1	10	1	0	0	10
46.—Ditto—Hen	1	10	1	0	0	10

SELLING CLASSES.

	First Prize £	First Prize s.	Second Prize £	Second Prize s.	Third Prize £	Third Prize s.
47.—Any Distinct Breed—Cock or Cockerel (Price not to exceed £1 1s.)	1	10	1	0	0	10
48.—Any Distinct Breed—Hen or Pullet (Price not to exceed £1 1s)	1	10	1	0	0	10

CHICKENS OF 1926.

	First Prize £	First Prize s.	Second Prize £	Second Prize s.	Third Prize £	Third Prize s.
49.—Cochin, Brahma, Plymouth Rock, Orpington, Langshan, Sussex or Dorking—Cockerel	1	10	1	0	0	10
50.—Ditto—Pullet	1	10	1	0	0	10
51.—Minorca, Wyandotte, Leghorn, Campine, Hamburg, Faverolles or French—Cockerel	1	10	1	0	0	10
52.—Ditto—Pullet	1	10	1	0	0	10
53.—Game, Malay, or any other Distinct Breed not previously mentioned—Cockerel	1	10	1	0	0	10
54.—Ditto—Pullet	1	10	1	0	0	10

LIVE TABLE POULTRY.

	First Prize £	First Prize s.	Second Prize £	Second Prize s.	Third Prize £	Third Prize s.
55.—Pair of Cockerels of any Pure Breed, hatched in 1926	1	10	1	0	0	10
56.—Pair of Pullets of any Pure Breed, hatched in 1926	1	10	1	0	0	10
57.—Pair of Cross-Bred Cockerels, hatched in 1926	1	10	1	0	0	10
58.—Pair of Cross-bred Pullets, hatched in 1926	1	10	1	0	0	10

UTILITY POULTRY.

	First Prize £	First Prize s.	Second Prize £	Second Prize s.	Third Prize £	Third Prize s.
59.—Light Breed—Cock	1	10	1	0	0	10
60.—Ditto—Hen	1	10	1	0	0	10
61.—Heavy Breed—Cock	1	10	1	0	0	10
62.—Ditto—Hen	1	10	1	0	0	10

CHAMPION PRIZES.

	First Prize £	First Prize s.	Second Prize £	Second Prize s.	Third Prize £	Third Prize s.
Best Cock or Cockerel exhibited in any of the Classes	3					
Best Hen or Pullet exhibited in any of the Classes	3					

DUCKS, GEESE AND TURKEYS.

	First Prize £	First Prize s.	Second Prize £	Second Prize s.	Third Prize £	Third Prize s.
63.—Drake or Duck (Aylesbury)	1	10	1	0	0	10
64.— „ „ (Rouen)	1	10	1	0	0	10
65.— „ „ (Indian Runner)	1	10	1	0	0	10
66.— „ „ (Any other variety)	1	10	1	0	0	10
67.—Gander or Goose	1	10	1	0	0	10
68.—Turkey—Cock or Hen	1	10	1	0	0	10

POULTRY—Continued.

LOCAL CLASSES.

The Prizes in Classes 69 to 82 are offered by the Herts Agricultural Society and competition is confined to Residents in the County Radius, which includes the whole of the County of Hertford and that portion of the County of Middlesex within an eleven mile radius of the Post Office at Hatfield.

	First Prize. £	s.	Second Prize. £	s.	Third Prize. £	s.
69.—**Sussex (Any colour)—Cock or Cockerel**	0	15	0	10	0	5
70.—**Ditto—Hen or Pullet**	0	15	0	10	0	5
71.—**Wyandotte—Cock or Cockerel**	0	15	0	10	0	5
72.—**Ditto—Hen or Pullet**	0	15	0	10	0	5
73.—**Rhode Island—Cock or Cockerel**	0	15	0	10	0	5
74.—**Ditto—Hen or Pullet**	0	15	0	10	0	5
75.—**Orpington (Any colour)—Cock or Cockerel**	0	15	0	10	0	5
76.—**Ditto—Hen or Pullet**	0	15	0	10	0	5
77.—**Any other Variety (Heavy)—Cock or Cockerel**	0	15	0	10	0	5
78.—**Ditto—Hen or Pullet**	0	15	0	10	0	5
79.—**Ditto (Light)—Cock or Cockerel**	0	15	0	10	0	5
80.—**Ditto (Light)—Hen or Pullet**	0	15	0	10	0	5
81.—**Buff Orpington or Indian Runner—Drake or Duck**	0	15	0	10	0	5
82.—**Any other Variety—Drake or Duck**	0	15	0	10	0	5

PIGEONS.

Entry Fees : Members, 1/6 ; Non-Members, 2/- each entry.

Judge—P. R. HARROWER, 2, Sandland Street, Holborn, London, W.C.1.

	£	s.	£	s.	£	s.
83.—POUTER, PIGMY or CROPPER—Cock or Hen	0	10	0	8	0	6
84.—DRAGON—Cock	0	10	0	8	0	6
85.—Ditto—Hen	0	10	0	8	0	6
86.—MAGPIE (Black)—Cock or Hen	0	10	0	8	0	6
87.—MAGPIE (Any other colour)—Cock or Hen	0	10	0	8	0	6
88.—TUMBLER (Long-faced)—Cock or Hen	0	10	0	8	0	6
89.—JACOBIN (Black)—Cock or Hen	0	10	0	8	0	6
90.—Ditto (Any other colour)—Cock or Hen	0	10	0	8	0	6
91.—ORIENTAL (Any variety)—Cock or Hen	0	10	0	8	0	6
92.—NUN (Black)—Cock or Hen	0	10	0	8	0	6
93.—Ditto (Any other colour)—Cock or Hen	0	10	0	8	0	6
94.—ARCHANGEL—Cock	0	10	0	8	0	6
95.—Ditto—Hen	0	10	0	8	0	6
96.—MODENA—Cock	0	10	0	8	0	6
97.—Ditto—Hen	0	10	0	8	0	6
98.—FANTAIL (White) —Cock or Hen	0	10	0	8	0	6
99.—Ditto (Any other colour)—Cock or Hen	0	10	0	8	0	6
100.—FLYING TIPPLER or TUMBLER—Cock	0	10	0	8	0	6
101.—Ditto—Hen	0	10	0	8	0	6
102.—WORKING HOMER—Cock	0	10	0	8	0	6
103.—Ditto—Hen	0	10	0	8	0	6
104.—Any other Variety—Cock or Hen	0	10	0	8	0	6
105.—SELLING CLASS (Any Variety, not to exceed £2)—Cock or Hen	0	10	0	8	0	6
106.—Ditto (Any Variety, not to exceed £1)—Cock or Hen	0	10	0	8	0	6

RABBITS.

Entry Fees : Members, 1/6 ; Non-Members, 2/- each entry.

Judge—G. GARDNER, 11, Haverstock Road, London, N.W.5.

	First Prize		Second Prize		Third Prize	
	£	s.	£	s.	£	s.
1.—English (Black or Blue), 4 months old and over ..	0	10	0	8	0	6
2.—Ditto (Any other colour), 4 months old and over ..	0	10	0	8	0	6
3.—Ditto (Any colour), under 4 months	0	10	0	8	0	6
4.—Silver—Any age	0	10	0	8	0	6
5.—Dutch (Black or Blue), 4 months old and over ..	0	10	0	8	0	6
6.—Ditto (Any other colour), 4 months old and over ..	0	10	0	8	0	6
7.—Ditto (Any colour), under 4 months	0	10	0	8	0	6
8.—Chinchilla	0	10	0	8	0	6
9.—Beveran (Blue)	0	10	0	8	0	6
10.—Ditto (White)	0	10	0	8	0	6
11.—Belgian Hare, 4 months old and over	0	10	0	8	0	6
12.—Ditto, under 4 months	0	10	0	8	0	6
13.—Havana	0	10	0	8	0	6
14.—Tan	0	10	0	8	0	6
15.—Lilac	0	10	0	8	0	6
16.—Flemish Giant	0	10	0	8	0	6
17.—Any other Variety, 4 months old and over	0	10	0	8	0	6
18.—Ditto, under 4 months	0	10	0	8	0	6
19.—Selling Class (Any Variety), price not to exceed £1	0	10	0	8	0	6

SPECIAL PRIZE.

Offered by Mr. Norman Robinson for the Best Rabbit shown by an Exhibitor residing within 10 miles of the Watford Post Office —£3.

CONDITIONS AND REGULATIONS FOR LIVE STOCK.

GENERAL.

ENTRIES.

1. The following are the Fees payable for Stock entries made on or before April 7. After that date and up to April 14 entries (except in the Any Agricultural, Saddle, Harness and Jumping Classes) will only be received on payment, in each case, of double the fee named below. *Exhibitors are requested to note that no exception can be made to this.* The entry fee is not returnable to an Exhibitor who enters an Animal in a Class for which it is ineligible, or for entries that are withdrawn after the date of entry has expired.

		MEMBERS. (see Reg. 4 below)	NON-MEMBERS.
Shire Horses, Percherons, Suffolk and Hunters for each entry, including Horse Box		25s.	50s.
Arabs and Ponies, including Box		10s.	10s.
Any Agricultural Horses, without Box		10s. 6d.	21s.
Saddle, Harness and Jumping, without Box		5s.	10s.
Ditto, with Box	for each Entry	25s.	50s.
Cattle	for each Entry	17s. 6d.	35s.
Local Classes	for each Entry	10s. 6d.	21s.
Nurse Cows	for each Entry	40s.	40s.
Sheep and Pigs	for each Entry	15s.	30s.
Goats	for each Entry	7s. 6d.	10s.

For particulars as to fees in the Produce, Butter-making, Milking, Shoeing, Poultry, Pigeon and Rabbit Classes, see Entry forms.

2. Animals entered in the Any Agricultural, Saddle, Harness and Jumping Classes, and not having a box in the Yard, must be in the Yard by the time stated on the day on which they compete, and, with the consent of the Stewards may leave the Yard as soon as they have been judged. Entries in these Classes, if no Box is required, must reach the Secretary not later than 12 noon on the day previous to the competition for which the animal is entered. If a Box is required the entry must reach the Secretary on or before April 7, or at double fees as stated above, by April 14.

3.—No Entry will be received unless the fee accompanies it, and (if the Exhibitor is a Member of the Society) the subscription for the year, unless previously paid, together with any arrears that may be due.

4. The privilege of entering at Members' fees is strictly limited to members of the Society, or of the Herts Agricultural Society, elected on or before January 31, 1926, and subscribing not less than £1 annually, or if elected after that date who has paid his subscription for 1926 and an additional £1 to the Society before the date of the closing of entries.

5. Where a Prize is offered for a *pair or pen* of Animals, single entry fees only are payable for each *pair or pen*, and only one entry form must be used.

6. Exhibitors desiring to send a nurse cow with their exhibits must give notice at the time of making their entry.

7. All Entries must be made on the printed forms to be obtained of the Secretary (F. Holland Storr, 3, Pierrepont Street, Bath), and, in applying for Forms, Exhibitors are requested to state how many entries they wish to make of either Horses, Cattle, Sheep, Goats or Pigs, as a separate entry form must be filled up for each animal entered in a separate class.

8. Every Exhibitor or Competitor is requested to carefully examine the List of Prizes and Conditions, as he will be held responsible for the correctness of his Certificate of Entry. An Exhibitor omitting to give information asked for on the entry form, with regard to the age, breeder, name, colour, sire, dam, &c., of an animal, will be liable to have his entry disqualified, and, if an exhibitor desires that his animal shall compete for any special prize offered, he must notify this on the entry form where requested to do so.

9. If an Exhibitor or Competitor fails, when called upon by the Stewards or Council, to prove the correctness of his Certificate of Entry to their satisfaction, the Entry may be disqualified and any award made to it cancelled.

10. An Exhibitor who has made, in due time, an entry of Horses, Cattle, Sheep, Goats or Pigs, in a particular class, will be permitted, up to Wednesday, April 22, to withdraw the entry of such animal, and to substitute for it the entry of another animal in the same class, on payment of the difference, if any, between the amount of the entry fee originally paid for the animal withdrawn, and the post entry fee. When, after entry, an animal dies, the exhibitor will be permitted to substitute another entry for it, in the same class, without payment of any further fee, upon affording evidence of death and furnishing particulars of the substituted entry in time for the alteration to be made in the published catalogue.

11. An animal can be entered in as many Classes as it is eligible for on payment of an additional fee in each Class. No additional fee is, however, payable in the case of Special or Champion Prizes for exhibits already entered in any particular Class.

12. Every exhibit must be the *bona fide* property of the Exhibitor both at the time of entry and on the first day of the Exhibition. For the purposes of this Meeting H.M. Officers' chargers will be considered as the property of the Officer in Classes 59 to 68.

SHOW YARD.

13. The Yard will be open for the reception of Horses (see Regulation 2 for Any Agricultural, Saddle, Harness and Jumping Horses), Cattle, Sheep, Goats and Pigs, on Saturday, Sunday and Monday, May 22, 23 and 24. Shire, Percheron and Suffolk Horses and Hunters will also be received from 6 to 8 o'clock on the morning of the first day of Show, but all other Stock Entries (except Arabs and Ponies, which must be in the Yard before the time stated on Friday, May 28), must be in the Yard by 6 p.m. on May 24. A label denoting the number of each entry will be sent by the Secretary, and must be securely affixed to the head of the Animal. The carriage of exhibits must in all cases be paid by the Exhibitor. No exhibit subject to charges will be received by Officers of the Society.

14. No animal can be removed from its place in the Yard without the special permission of the Stewards.

15. If any animal is brought into the Show Yard without having been entered for exhibition, the owner shall be liable to a fine of £2 and to the forfeiture of any prize awarded to him or her.

16. During the time the Show is open to the public no rug or cloth shall be hung up so as to conceal any animal in a horse-box or stall, except with the special permission of the Steward of the department. All sheets used for the purpose must be removed by 9 a.m. each morning, and must not be replaced until after the closing hour of the Show each day.

17. All Exhibits and all persons in charge of the same, will be subject to the Orders, Regulations, and Rules of the Society, and the Stewards shall have the power to remove from the Yard the Stock or property belonging to, and to cancel the admission ticket of, any Exhibitor who shall infringe any of the Regulations or Conditions of the Meeting, or who shall refuse to comply with any instructions given by the Stewards, without any responsibility attaching to the Stewards or the Society in consequence of such removal.

18. No animal shall be decorated with colours other than the Society's Prize Rosettes.

19. No person will be allowed to fix any placard, or to take down any placard in the Yard, without the permission of the Stewards.

20.—All persons in charge of Exhibits will be subject to the orders of the Stewards, and will be required to parade or exhibit the animals in their charge at such times as may be directed by the Stewards. Servants must be in attendance each day during the Show at least a quarter of an hour before the time appointed for exhibiting the animals under their charge in the Show rings. Servants in charge of animals must see that the animals' boxes or stalls are kept clean. Stockmen are required to clear their sheds of manure by 6 a.m. each day. No oil or cooking stove of any description must be lighted in the Horse Boxes, and any one found offending in this respect will be dealt with in accordance with Regulation 33. Owners of animals exhibited will be held responsible for the behaviour of their Servants, and for the consequences of any misconduct of such Servants.

21. Servants in charge of Stock at night must, if they leave the Yard, return before 10 p.m., or they will not be admitted.

22. On the day previous to the opening, and on each day of the Show, hay or green food and straw will be supplied by the Society free of expense to exhibitors at the Forage Stores in the Show Yard. Servants must apply at the Forage Stores for their Forage Tickets after they have brought their animals into the Yard. Corn, meal, and cake can be obtained in the Show Yard at fixed prices.

NOTE.—For the convenience of Exhibitors wishing to sell their animals, a Register will be kept at the Secretary's Office, in which they may enter the prices.

TICKETS.

23. Each Exhibitor of Live Stock whose entry fees amount to £1 and upwards will have a free Ticket of admission to the Show Yard sent to him, except in the case of a Member, who will receive his Member's Badge in lieu of an Exhibitor's Ticket. Tickets for the use of Servants in charge of Live Stock remaining in the Yard will also be sent, and the Exhibitor will be held responsible for the proper use of such Tickets. In the case of animals not having a box in the Yard, a Servant's Ticket will not be required, as the official label will admit the Driver or Rider, Horse and Vehicle into the Yard. In case of transfer or other improper use of a Ticket the Exhibitor will be required to pay a fine of £1 for each case. Exhibitors will be held responsible for the attendance at each Parade of as many Servants as Tickets have been issued for.

RESPONSIBILITY.

24. Neither the Society nor any of its Officers or Servants shall be in any way responsible or accountable for anything that may happen (from any cause or circumstances whatever) to Exhibitors or their Servants, or to any animal or article exhibited, or property brought into the Show Yard, or otherwise for anything else in connection with, or arising out of, or attributable to, The Society's Show, or these or any other Conditions or Regulations prescribed by the Society in relation thereto.

25. Each Exhibitor shall be solely responsible for any consequential or other loss, injury, or damage done to, or occasioned by, or arising from, any animal or article exhibited by him, and shall indemnify the Society against all legal or other proceedings in regard thereto.

26. The Society, its Officers and Servants, will not be liable for any errors or mistakes that may happen in placing or penning the Stock or Articles to be exhibited, but the Servants in charge of the same must see that they are placed or penned according to their entries

DISQUALIFICATION.

27. The use of resin, soap, sawdust above the knee, or other substances designed to give an artificial appearance ; cording ; or other improper means adopted in showing an animal in the Agricultural Horse Classes will be regarded as a disqualification.

28. No animal which has been exhibited as Fat Stock at any Show shall be eligible to compete for the Prizes offered in this Prize Sheet.

29. An animal in the Breeding Classes having any unsoundness likely to be transmitted to its progeny shall be disqualified thereby from receiving any Prize offered by or through the Society.

30. If it shall be proved to the satisfaction of the Stewards or Council that an Exhibitor or Competitor has knowingly signed an incorrect Certificate, or knowingly given an incorrect Pedigree of any animal, or has attempted to enter an animal or other exhibit or to obtain a Prize by any other unfair means at this or any other Agricultural Society's Meetings, or is under exclusion from any Breed Society for fraudulent practices, the Council shall have the power to cancel all awards made to such Exhibitor or Competitor, to disqualify him or her from exhibiting or competing at future Meetings of the Society, and to inform other Agricultural Associations of their action in this respect.

PENALTIES.

31. As the non-exhibition of animals entered for the Show causes unnecessary preparations and expense, and disarranges the Show Yard, any person entering Stock, and failing to exhibit the same, shall pay a penalty of 10s. for each entry, unless a Certificate, under the hand of the Exhibitor or his authorised agent, be lodged with the Secretary of the Society, before the day of exhibition, certifying that such non-exhibition is caused either by—(1) the death of the animal or animals ; or (2) contagious or infectious disease (confirmed by the explanatory certificate of a Veterinary Surgeon) or other sufficient cause ; or (3) by its becoming ineligible for the Class in which it has been entered. The fine is not remitted in the case of an Exhibitor selling an animal between the time of entry and the date of the Show.

32. Every Exhibitor will be required to undertake to forfeit and pay to the Society the sum of £20, as and for liquidated damages, if any animal which he exhibits be, to his knowledge, suffering from any contagious or infectious disease, and the Stewards are empowered to prevent the entry of any diseased animal into the Yard, or to have it removed therefrom.

33. Any infringement of any of these or any other prescribed Regulations or Conditions will subject the Exhibitor to a fine of £1 by the Stewards, and to the forfeiture, by order of the Council, of any prize to which he may be entitled (in addition to all other consequences attaching to such infringement). The Council reserves to itself the right to inform other Agricultural Associations of any decision it may come to with respect to an Exhibitor.

AWARDS.

34. The Society reserves to itself the right to withhold any prize, if, in the opinion of the Stewards, the conditions and regulations have not been properly complied with, or if, in the opinion of the Judge, there is insufficient merit.

35. Only the signed awards of the Judges are accepted by the Society as evidence that a prize has been awarded, and the production of the prize card or the rosette by an Exhibitor will not entitle him to the prize.

36. The certificate of the Veterinary Inspector, whether as to age or soundness shall be required only in cases where the Judges are in doubt, or where the Stewards may consider it necessary. (See also Regulation 46 with reference to

Stallions and Mares). The decision of the Inspector in such cases shall be final and conclusive; and in case it shall be against the animal to which a Prize has been awarded, such animal shall be disqualified from receiving such Prize.

PROTESTS.

37. Any Exhibitor wishing to lodge a protest having reference to Live Stock exhibited at this meeting must make the same in writing on a form to be obtained from the Secretary, and deposit with him the sum of £3. If, on investigation, the protest is not sustained to the satisfaction of the Stewards, the sum thus deposited, shall, at the discretion of the Council, be forfeited to the funds of the Society. All protests (except in the Any Agricultural, Saddle, Harness or Jumping Classes) must be delivered at the Secretary's Office in the Show Yard on the day on which the award is made, and no protest will be SUBSEQUENTLY received, unless a reason, satisfactory to the Stewards, be assigned for the delay. Any protest against an award in the Any Agricultural, Saddle, Harness or Jumping Classes must be made to the Steward in the ring immediately after the judging of the class to which it refers, and a deposit of £3 must, at the same time, be handed to the Steward. The Stewards will consider such protests at 11 o'clock on the following day at the Secretary's Office, at which time and place any person making a protest must attend or be represented by his authorised agent. The decision of the Stewards shall be final.

APPLYING TO CERTAIN CLASSES ONLY.

HORSES.

38. Horses can be removed from the Yard at night on deposit by the Exhibitor of £3 at the Finance Office, which sum will be forfeited if the Horse does not return at 8 a.m. each day during the Exhibition. This Regulation does not apply to Animals not having a box in the Yard entered in the Any Agricultural, Saddle, Harness and Jumping Classes only.

39. Exhibitors must provide saddles for Horses in Classes 22 to 26, 40 to 47, and 59 to 68, as they are to be ridden; and vehicles and harness for those in Classes 48 to 58, which are to be driven.

40. No Horse, unless a Foal, will be admitted into the Ring without a proper bit.

41. The Prizes for Stallions foaled before 1924 will be withheld until a certificate from the owner is delivered to the Secretary that the Horse has served at least 10 Mares during the current season.

42. All Foals must be the offspring of the Mares with which they are exhibited, and the name of the sire of the Foal must be stated on the certificate of entry.

43. Mares entered as in Foal shall, except as otherwise stated hereafter, be certified to have produced a living Foal before August 1st of the year of the Show. If the required certificate, which must be on a form obtainable from the Secretary, is not received by September 30, 1926, the prize awarded will be forfeited.

44. Horses may, at the discretion of the Stewards, be measured, and the measurement shall be taken in the shoes worn by the entry at the time of judging, and these shoes shall not be removed to allow of the entry being shown in another class.

45. In the Harness Classes for Hackneys exceeding 14 hands (except yearling colts and fillies), no shoe (nails included) may exceed 2 lbs. in weight, and for Ponies not exceeding 14 hands, yearling colts and yearling fillies, no shoe (nails included) may exceed 1¼ lbs. in weight.

46. All Stallions and Mares (yearlings and foals excepted) to which prizes have been awarded in the breeding classes shall be examined by the Society's Veterinary Inspector, and unless pronounced free from indications of hereditary disease

shall be ineligible to receive the prize. The owner of an Animal rejected under this Regulation may, upon his application in writing to the Secretary, be furnished with a copy of the Veterinary Certificate. This Regulation shall not, however, apply to any animal holding a Ministry of Agriculture Certificate for the current year, which must accompany the animal and be available for inspection by officers of the Society.

47. The following special conditions apply only to the Medals offered by the Shire Horse Society, viz.; the owner of the animal awarded the Gold Medal to have been a Member of the Bath and West and Southern Counties Society, for not less than six months previous to March 31, 1926; a Mare, five years old or upwards, must produce a Foal in the current year, or have had a Foal in the preceding year; in the case of in-foal Mares a certificate of foaling must be lodged with the Secretary of the Shire Horse Society before the medal will be despatched. No animal to compete which has won the Shire Horse Society's Gold Medal during the current year; the Royal and London Shows being excepted; the winning animal to be entered, or eligible for entry in the Shire Horse Society's Stud Book; and a certificate that the winner is free from hereditary disease signed by the Society's Veterinary Inspector after his examination on the Show Ground, must be lodged with the Secretary of the Shire Horse Society, but Stallions licensed by the Ministry of Agriculture, and Stallions, Mares and Fillies passed at the London Show, shall be exempt from further examination when selected for Medals during the current year. A prize of £2 will also be awarded to the breeder of the animal winning the Medal, provided that he is a member of the Shire Horse Society, and that the Dam is a Mare registered in the Shire Horse Stud Book. All awards must be completed within one month of the date upon which the Medal was awarded, or they will be void. The Council reserves the right to award the prizes only to persons approved by the Shire Horse Society and subject to confirmation in the uncontrolled discretion of the Council. The name and number of the sire of the animal awarded the Bronze Medal must be printed in the Catalogue or proof must be supplied by the Breeder. The exhibitor must be a member of the Shire Horse Society; and Geldings, 5 years old and upwards must be good and quiet workers. The Selected Gelding must be passed as sound by the Society's Veterinary Inspector after his examination on the Show Ground unless officially passed at the previous London Show, when it shall be exempt from further examination. No gelding is eligible to take more than one Bronze Medal during any one year.

48. The following special conditions apply only to the Medal offered by the Hunters' Improvement and National Light Horse Breeding Society for Hunter Brood Mares, viz.:—The Mare awarded the Medal must possess a certificate of soundness from hereditary disease, signed by the Bath and West Society's appointed Veterinary Inspector, who must be a member of the Royal College of Veterinary Surgeons, after his examination of the animal on the Show Ground. Any Hunter Brood mare, 8 years old or over, having been either awarded one of the Society's Gold Medals since 1910, or selected as Reserve for same, or having been passed sound after January 1, 1911, by a Veterinary Surgeon appointed by the Hunters' Improvement and National Light Horse Breeding Society, shall be exempt from further examination upon the owner producing at the time of exhibition the official veterinary certificate issued by the Secretary of that Society.

49. The following Special conditions apply only to the Medal offered by the Hunters' Improvement and National Light Horse Breeding Society for best Mare or Gelding of any age exhibited in the Saddle Classes. The Hunter awarded the medal must possess a certificate of soundness from hereditary disease, signed by the Bath and West Society's Veterinary Inspector, who must be a member of the Royal College of Veterinary Surgeons, after his examination of the animal on the Show Ground. The selected Mare, if unregistered, or the selected Gelding, if unentered, must be registered or entered within a month of the award in the Hunter Stud Book. No animal may take more than one of these Medals in 1926.

The Judge, in awarding the Medal, is instructed to give preference to animals showing weight-carrying properties.

NOTE.—No awards of the above-named Society's Prizes or Medals to a Hunter named and registered in the Hunter Stud Book and subsequently entered by the owner under another name, will be recognised or confirmed unless a re-entry has been previously lodged by the owner for the Hunter Stud Book and the new name registered by the Society.

50. The following special conditions apply only to the Silver Medal offered by the Hackney Horse Society in the Harness Classes. All horses competing for the Medal must *be by a Registered Hackney Sire.* All Geldings must be registered in the Stud Book. A Certificate signed by the Breeder of any unregistered mare must be forwarded to the Secretary of the Hackney Horse Society before the Medal is despatched. Each animal must be examined by a qualified Veterinary Surgeon on the Show ground, and a Certificate of Soundness must be supplied. The Medal must be open to all Classes, and not confined to local competition, and the name and number of the sire, and the name and address of the breeder of each animal should appear in the Catalogue. No animal can take more than one of the Silver Harness Medals in any one year.

51. The Jumping Competitions will be carried out in accordance with, and judged under the rules of, the Show Jumping Association. The jumps may consist of a single hurdle, gate, double hurdle, bank, wall, and water, at the discretion of the Judge and Stewards. Each horse competing shall have its catalogue number affixed in such a way as to be easily seen by the general public.

CATTLE.

52. All cattle must be properly secured to the satisfaction of the Officers of the Society on being brought to the gate of the Yard, or they will not be admitted. All Bulls must have a ring or clamp attached to the nose and, in the aged Classes, must be provided with a strong chain, and be led with a proper stick.

53. All cattle will be required to be paraded in the ring at least once a day at the discretion of the Stewards.

54. No Bull calved before January 1st, 1924, or in the Aberdeen-Angus Classes before December 1st, 1923, will be eligible to receive a Prize until certified to have served not less than six different cows (or Heifers) previous to June 1st, 1926, and to be the sire of live calves dropped in the year 1926, or in the Aberdeen-Angus Classes after December 1st, 1925.

55. No Cow or Heifer, entered as in-milk, will be eligible to receive a Prize unless certified to have had a living Calf within the fifteen months preceding the date of the Show, or that the Calf, if dead, was born at the proper time.

56. Every Cow or Heifer in-milk shall be milked dry in the Show Yard by 7.30 p.m. on the evening preceding the day of judging, in the presence of an officer of the Society appointed for the purpose.

57. Any animal in the Cattle Classes found to be artificially coloured will be disqualified.

58. The milk yielded by Cows in the Show Yard must not be sold at the stalls, but will be purchased by the Society for the purpose of the Dairy at a price to be agreed upon, and will be paid for on delivery at the Milk Receiving Office in the Dairy.

59. The following conditions apply only to the prizes offered for Pedigree Dairy Shorthorn Milking Cows :—The Cows and Heifers entered will be clean milked out at 6 o'clock on the evening preceding the opening of the Show to the satisfaction of the Stewards, and will be again milked in the ring on the first

morning of the Show in the presence of the Judge, who shall see the Milk weighed, and any animal not yielding up to the following standard will not be awarded a prize. Ages of cows to be calculated to the date on which the cow or heifer produced her last calf:—

	Having Calved within 2 calendar months of the 1st day of the Show.	Having calved between 2 and 3 calendar months of the 1st day of the Show.	Having calved more than 3 calendar months of the 1st day of the Show.
	lbs. of milk.	lbs. of milk.	lbs. of milk.
Cows, 5 years and upwards ..	30	27	24
Cows, 4 years and under 5 years	26	23	20
Cows or Heifers, 3 years and under 4 years	22	19	16
Heifers, under 3 years old ..	18	15	12

60. The following conditions apply only to the special prize offered for Pedigree Dairy Shorthorn Bulls, calved in 1925. The Bull must comply with the requirements necessary for inclusion in the Dairy Shorthorn Association's list of qualified Bulls and must possess the following further qualifications:—That the following cows in the pedigree of such bull are, or are entitled to be, registered as qualified cows in the Association's Register, viz.: 1, the dam of the bull's dam; 2, the dam of the dam of the bull's sire; 3, the dam of the sire of the bull's dam. No bull having taken one of these prizes to be eligible to compete again the same year except at the R.A.S.E. Show.

61. In the Kerry and Dexter Classes clipping (except in the case of a few hairs on the top of the tail) will disqualify an animal.

62. The following conditions apply to animals entered in the Milk and Butter Test Classes:—The date of last calving must be given on the entry form and, when an animal calves between the date of entry and that of the Show, notice of such calving must be sent to the Secretary or the animal may be disqualified. Points will be allowed as follows:—

Milk Test Classes:—1 point for each 1lb. of Milk, and points for butter fat at each milking calculated at one-third of the excess percentage over 3% multiplied by the number of lbs. yield. Points are deducted on a similar basis where the Milk is below 3%: 1 point for every completed 10 days since calving, calculated to opening day of Show, deducting the first 40 days, maximum allowance 12 points.

Butter Test Classes:—1 point for each ounce of Butter. Lactation points as in Milk Test.

63. Except in Local and Dairy Classes, every animal entered for competition must be entered, or certified as eligible to be entered, in the Herd Book of its Breed, where such Herd Book exists and has been in existence for not less than seven years, and all cattle must be tattooed in accordance with the rules of their respective Breed Societies, where such rules exist. Where an animal is entered by the Exhibitor as eligible for entry in the Herd Book of its breed, proof of such eligibility must be furnished to the Secretary at the time of making the entry.

SHEEP.

64. Each pen of Ewes must be of the same Flock.

65. The following conditions apply to the Medal offered by the Southdown

Sheep Society :—The sheep competing must be entered or eligible for entry in the Flock Book, and there must be at least three competitors.

66. Except in Local Classes every animal entered for competition must be entered or certified as eligible to be entered, in the Flock Book of its Breed, where such Flock Book exists and has been in existence for not less than seven years, and all Sheep must be tattooed in accordance with the rules of their respective Breed Societies where such rules exist. Where an animal is entered by the Exhibitor as eligible for entry in the Flock Book of its breed, proof of such eligibility must be furnished to the secretary at the time of making the entry.

PIGS.

67. All Sows farrowed before 1926 shall be certified to have had a litter of live Pigs within six months preceding the first day of exhibition, or to be in-Pig at the time of entering, so as to produce a litter of Pigs, farrowed at their proper time. before the 1st of September following. In the case of in-Pig Sows the Prize will be withheld until the Exhibitor shall have furnished the Secretary with a certificate of farrowing as above. If the required Certificate, which must be on a form obtainable from the Secretary, is not received on or before the 15th September following, the prize awarded will be forfeited.

68. All Pigs exhibited with a Sow shall be her own produce, of the same litter, and not exceeding two months old at the time of the Show.

69. No Sow above 18 months old that has not produced a litter of live Pigs shall be eligible to compete in any of the Classes.

70. Any animal in the Pig Classes found to be artificially coloured, whitened or powdered will be disqualified.

71. Should any question arise as to the age of any exhibit in the Pig Classes, the Stewards shall at the request of the Judge, have the state of their Dentition examined by a competent authority. If the state of the Dentition shall indicate that the age of any of the Pigs does not agree with the Dentition Test, the Stewards shall report the same to the Council, who shall have power to disqualify such Pig or Pigs. The following is the state of Dentition in Pigs which will be considered as indicating that they exceed the ages specified below —Six Months : Pigs having their corner permanent incisors cut will be considered as exceeding this age. Nine Months : Pigs having their permanent tusks more than half up, will be considered as exceeding this age. Twelve Months : Pigs having their central permanent incisors up, and any of the three first permanent molars cut, will be considered as exceeding this age. Fifteen Months : Pigs having their lateral temporary incisors shed, and the permanents appearing, will be considered as exceeding this age. Eighteen Months : Pigs having their lateral permanent incisors fully up will be considered as exceeding this age.

72. Except in the Local Classes, every animal entered for competition must be entered or certified as eligible to be entered in the Herd Book of its breed, where such Herd Book exists and has been in existence for not less than seven years, and must conform to the rules of their respective Societies. In the Berkshire classes the exhibits must be entered or accepted for entry in the British Berkshire Herd Book, and in the Large Black Classes the official ear-marker bearing the Herd Book number must be in the ear of all pigs entered, and the Judges will be instructed not to award prizes unless this regulation is observed, or a reasonable explanation given for the absence of the marker.

GOATS, CIDER, POULTRY, PIGEONS, RABBITS, DAIRY PRODUCE, BUTTER MAKING, MILKING AND SHOEING COMPETITIONS.

For Conditions and Regulations see entry form.

ADJUDICATION OF PRIZES.

73. The Judges are instructed as follows, and entries are received subject to this :—

a. Not to award any Prize or Commendation unless the entry possesses sufficient merit.

b. Not to award a Prize to any Horse or Mare in the Breeding Classes, unless it is free from unsoundness likely to be transmitted to its progeny ; or if a Gelding, unless free from unsoundness ; in either case, an accident having temporary consequences only excepted, and in awarding the Hunters' Improvement Society's Medals to give preference to animals showing weight-carrying properties.

c. In awarding Prizes to Cattle, Sheep, and Pigs, to decide according to the relative merits of the animals for Breeding purposes, and not to take into consideration their present value to the butcher.

d. To make the milking capacity and form of udder one of the chief points in awarding prizes to Cows and Heifers in-milk.

e. To draw the attention of the Stewards to any exhibit that has been improperly prepared for exhibition or is wrongly entered.

f. To give in a " RESERVE NUMBER " in each Class, indicating the animal or exhibit which in their opinion possesses sufficient merits for the Prize, if the animal or exhibit to which the Prize is awarded should become disqualified. Should the " Reserved Number " succeed to a prize, and be itself disqualified, the prize will be forfeited.

g. Immediately after the Judging to deliver to the Stewards their signed awards stating the numbers to which the Prizes are adjudged, and noting all disqualifications.

74. Should any question arise upon which the Judges may desire a further opinion, the Stewards shall provide them with a Referee.

PAYMENT OF PRIZES.

75. Cheques for the Prizes awarded (except where further qualification of an animal is required) will be drawn at the meeting of the Finance Committee held in July, 1926, and will then be forwarded by post to the Exhibitors to whom they have been awarded.

INTERPRETATION OF CONDITIONS.

76. The Society reserves to itself by its Council the sole and absolute right to interpret these or any other prescribed conditions and regulations, or Prize Sheets, and to arbitrarily settle and determine all matters, questions or differences in regard thereto, or otherwise arising out of or connected with or incident to the Show. Also to refuse and to cancel any entries, disqualify Exhibitors, prohibit exhibition of entries, vary or cancel awards of prizes or reserved numbers, and relax conditions, as the Society may deem expedient.

IMPLEMENTS, MACHINERY, ETC.

Entry Forms and Regulations referring to above, the entries for which close on March 16th, can be obtained of the Secretary, 3, Pierrepont Street, Bath.

By Order of the Council, F. H. STORR, *Secretary.*

Telegraphic Address—" AGRICULTURE," BATH.

Telephone No. 610.

FINANCIAL STATEMENTS

FOR

1925

WITH ITEMS OF 1924 FOR COMPARISON.

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The Bath and West and

Dr.

SUMMARY OF THE CASH ACCOUNT

WITH COMPARATIVE

Page of accompanying Cash Account.	RECEIPTS.		1925. Maidstone.		1924. Taunton.
			£ s. d.	£ s. d.	£ s. d.
	GENERAL.				
clxvi	Dividends and Interest		901 18 9		955 0 4
„	General		12 16 0		0 1 0
„	Subscriptions		1,080 18 0		1,181 13 0
„	Life Members		60 0 0		70 0 0
„	Journal		58 4 3		65 14 3
				2,113 17 0	2,272 8 7
	SHOW.				
clxviii	Implements		2,819 16 5		3,428 6 5
		£ s. d.			
„	Horses	979 13 6			1,248 4 0
„	Cattle, Sheep, Goats and Pigs	1,893 0 0			2,248 16 8
„	Catalogues, Fodder, etc.	142 0 7			118 5 0
			3,014 14 1		3,615 5 8
clxx	Poultry		61 0 0		89 0 0
„	Shoeing		27 12 0		30 12 0
„	Music		13 7 10		24 12 10
„	Small Holdings and Allotments				81 2 0
clxxii	Cheese and Butter		46 14 9		122 2 3
„	Working Dairy		99 13 11		165 13 7
„	Cider		12 17 6		12 18 0
„	Hops		84 15 0		
„	Admissions		4,714 11 3		6.668 16 9
clxxiv	Unapportionable.				
	Contract Premiums and Cloak Rooms	942 7 2			725 12 5
	Sales and Fittings	654 10 2			610 18 5
			1,596 17 4		1,336 10 10
„	Subscriptions from Towns		800 0 0		1,600 0 0
				13,292 9 1	17,175 0 4
				15,406 6 1	19,447 8 11
„	Sale of War Loan Stock			1,006 9 6	
„	Queensland Stock Redeemed				1,649 3 11
„	Deposit returned			1,500 0 0	4,500 0 0
	Balance in Bank, January 1st			974 4 2	350 0 6
				18,886 19 9	25,946 13 4

Southern Counties Society.

FOR THE YEAR ENDING DEC. 31st, 1925.

Cr.

STATEMENT FOR 1924.

Page of accompanying Cash Account.	PAYMENTS.		1925. Maidstone.		1924. Taunton.
			£ s. d.	£ s. d.	£ s. d.
	GENERAL.				
clxvii	Salaries		1,333 4 7		1,314 12 9
,,	Printing, Postage, Stationery, etc.		535 11 2		691 9 1
,,	Journal		439 10 11		439 12 7
				2,308 6 8	2,445 14 5
	SHOW.				
	Implements		1,167 0 11		1,255 16 11
clxix	Horses	£1,961 13 1			1,952 19 7
,,	Cattle, Sheep, Goats and Pigs	4,078 19 7			4,683 9 5
,,	Fodder, etc.	1,083 12 4			952 12 0
,,			7,124 5 0		7,589 1 0
clxxi	Poultry		351 5 2		368 6 4
,,	Shoeing		208 15 10		194 12 1
,,	Nature Study and Handicrafts		410 19 0		178 17 10
,,	Forestry		165 10 0		197 9 8
,,	Music		201 7 6		169 9 9
,,	Small Holdings and Allotments		6 14 5		78 5 2
clxxiii	Horticulture		346 7 5		331 8 2
,,	Cheese and Butter		231 9 10		278 18 0
,,	Working Dairy		580 5 11		645 1 11
,,	Cider		161 8 0		153 1 0
,,	Hops		88 17 7		
,,	Bees				59 4 8
clxxv	Public Announcements		754 6 8		673 1 9
,,	Unapportionable.				
	Erection of Offices, etc.	£2,382 8 10			2,267 8 1
	Carriage of Plant	182 11 3			256 6 5
	Stand Fittings	235 12 5			259 3 4
	Police				263 3 10
	Miscellaneous	722 17 5			624 13 8
			3,523 9 11		3,670 15 4
				15,322 12 2	15,843 9 7
,,	**EXPERIMENTS.**			131 0 1	158 4 11
				17,761 18 11	18,447 8 11
,,	**INVESTMENTS and DEPOSIT.**			43 0 0	6,525 0 3
	Balance in Bank, December 31st			1,082 0 10	974 4 2
			£	18,886 19 9	25,946 13 4

January 18th, 1926.

Audited and found correct,

F. CLIFFORD GOODMAN, F.C.A.,

Auditor.

Passed by Council,

January 26th, 1926.

F. H. STORR,

Secretary.

The Bath and West and

Dr. CASH ACCOUNT FOR THE YEAR ENDING DEC. 31st,

RECEIPTS.	1925. Maidstone.		1924. Taunton.
	£ s. d.	£ s. d.	£ s. d.
DIVIDENDS AND INTEREST.			
War Loan Stock	179 12 11		205 5 9
Ditto to replace Capital lost by Conversion of Consols	15 12 9		13 19 6
South Australian Stock	32 12 10		32 2 6
New Zealand Stock	43 4 4		48 14 1
India Stock	178 2 0		187 19 9
New South Wales 4 per cent. Stock	127 16 5		144 1 0
Canadian Pacific Railway Stock	47 5 0		46 10 0
Conversion 3½ per cent. Insc. Stock	165 7 6		162 15 0
New South Wales 5 per cent. Stock	98 8 9		
Interest on Deposit and Current Account ..	13 16 3		55 1 10
Queensland Stock			58 10 11
		901 18 9	955 0 4
GENERAL.			
Cancelled Cheques, etc.		12 16 0	0 1 0
SUBSCRIPTIONS FROM MEMBERS.			
Arrears	31 1 0		36 16 0
Governors	147 12 0		153 18 0
Subscribers of £1 and upwards	897 5 0		984 19 0
„ „ 10/-	5 0 0		6 0 0
		1,080 18 0	1,181 13 0
LIFE COMPOSITIONS		60 0 0	70 0 0
JOURNAL.			
Sales	13 6 5		8 16 10
Advertisements	44 17 10		56 17 5
		58 4 3	65 14 3
Carried forward		2,113 17 0	

Southern Counties Society.

1925, WITH COMPARATIVE STATEMENT FOR 1924. Cr.

PAYMENTS.	1925. Maidstone.		1924. Taunton.
	£ s. d.	£ s. d.	£ s. d.
SALARIES.			
Secretary and Editor	650 0 0		650 0 0
Assistant Secretary	450 0 0		450 0 0
Office Staff	173 4 7		154 12 9
Auditor	30 0 0		30 0 0
Consulting Chemist	30 0 0		30 0 0
		1.333 4 7	1,314 12 9
MISCELLANEOUS.			
Printing	30 1 5		37 9 9
Stationery and Finance Books	59 7 0		39 9 6
Postages, Telegrams, Insurance, Cheque and Receipt Stamps	75 13 8		91 10 4
Ground Rent and Rates	28 16 4		28 17 0
Income and Property Tax	9 6 9		156 5 3
Travelling Expenses	51 7 1		50 10 3
Carriage of Goods	15 9 6		7 8 6
Directories and Reference Books	0 7 0		0 14 0
Subscriptions	11 15 0		12 5 0
Repairs and Fittings	17 12 1		13 0 9
Hire of Council Rooms	2 4 0		2 2 0
Fuel and Light	16 9 6		12 16 11
Telephone	14 19 10		16 6 0
Council Grants and Allowance to Widow of late Secretary	202 2 0		200 0 0
Finance Committee's Expenses			16 11 4
Bank Charges			6 2 6
		535 11 2	691 9 1
JOURNAL.			
Printing and Stationery	325 3 3		323 3 3
Plans and Blocks	20 9 10		24 18 0
Distribution	34 9 10		34 11 4
Postages, Stationery, Reference Books, etc.	7 0 0		7 10 0
Authors	52 8 0		49 10 0
		439 10 11	439 12 7
Carried forward		2,308 6 8	

Dr.

CASH ACCOUNT—*continued.*

RECEIPTS.		1925. Maidstone.		1924. Taunton.
		£ s. d.	£ s. d.	£ s. d.
Brought forward			2,113 17 0	
IMPLEMENTS.				
Fees for Space :—				
Machinery in Motion Shedding		896 10 0		1,109 0 0
Ordinary ,, ...		268 0 0		295 0 0
Miscellaneous ,, ...		172 10 0		210 0 0
Boarded ,, ...		762 15 0		1,043 10 0
Uncovered Ground		576 13 11		603 12 5
Catalogue Fees		71 10 0		77 19 0
Entry Fees		58 0 0		76 0 0
Additional Assistants' Tickets		13 17 6		13 5 0
			2,819 16 5	3,428 6 5
HORSES, CATTLE, SHEEP, GOATS and PIGS.				
Horses :—Entry Fees and Fines ..	£258 14 6			355 0 0
Grand Stand Admissions	610 9 0			864 4 0
Special Prizes	110 10 0			29 0 0
		979 13 6		1,248 4 0
Cattle, Sheep, Goats and Pigs.				
Entry Fees	£1,102 10 0			1,348 5 0
Fines	27 0 0			29 10 0
Special Prizes	763 10 0			871 1 8
		1,893 0 0		2,248 16 8
Manure and Fodder	£116 16 7			118 5 0
Advertisement in Prize List (2 years)	25 4 0			
		142 0 7		118 5 0
			3,014 14 1	3,615 5 8
Carried forward			7.948 7 6	

CASH ACCOUNT—*continued.*

Cr.

PAYMENTS.		1925. Maidstone.		1924. Taunton.
		£ s. d.	£ s. d.	£ s. d.
Brought forward			2,308 6 8	
IMPLEMENTS.				
Shedding		961 4 7		1,105 10 9
Stewards and Assistants		130 6 7		98 7 8
Printing, Stationery, etc.		60 9 9		51 18 6
Fees returned		15 0 0		
			1,167 0 11	1,255 16 11
HORSES, CATTLE, SHEEP, GOATS and PIGS.				
Horses :—Prizes	£1,093 5 6			1,034 10 0
Shedding & Grand Stand	675 13 6			774 13 4
Stewards and Assistants	139 7 2			90 17 8
Judges	44 1 2			48 3 7
Carriage	9 5 9			
Fees returned				4 15 0
		1,961 13 1		1,952 19 7
Cattle, Sheep, Goats and Pigs.				
Cattle Prizes	£1,323 0 0			1,347 8 6
Sheep ,, ...	583 0 0			727 0 0
Goats ,, ...	28 10 0			13 0 0
Pigs ,, ...	523 0 0			513 0 0
Shedding and Canvas . ..	1,312 13 1			1,475 17 1
Stewards and Assistants	116 14 9			134 12 9
Judges	176 3 8			195 3 1
Fees returned	12 10 0			274 5 6
Miscellaneous	3 8 1			3 2 6
		4,078 19 7		4,683 9 5
Buildings, Etc.	£451 18 3			457 8 2
Fodder and Insurance	384 4 3			258 2 8
Forage Steward and Assistants ..	19 12 6			8 19 6
Veterinary Inspectors	60 5 3			39 4 1
Rosettes	11 10 6			15 5 10
Printing, Stationery, etc.	133 8 3			152 15 3
Refreshments for Judges	22 13 4			20 16 6
		1,083 12 4		952 12 0
			7,124 5 0	7,589 1 0
Carried forward			10,599 12 7	

Dr. CASH ACCOUNT—*continued.*

RECEIPTS.	1925. MAIDSTONE.		1924 TAUNTON.
	£ s. d.	£ s. d.	£ s. d.
Brought forward		7.948 7 6	
POULTRY.			
Entry Fees	61 3 0		88 6 0
Commission on Sales	0 6 0		0 14 0
		61 9 0	89 0 0
SHOEING.			
Entry Fees	9 12 0		15 12 0
Special Prizes	18 0 0		15 0 0
		27 12 0	30 12 0
MUSIC.			
Chairs		13 7 10	24 12 10
SMALL HOLDINGS and ALLOTMENTS.			81 2 0
Carried forward		8,050 16 4	

CASH ACCOUNT—*continued.*

Cr.

PAYMENTS.	1925. MAIDSTONE.		1924. TAUNTON.
	£ s. d.	£ s. d.	£ s. d.
Brought forward		10,599 12 7	
POULTRY.			
Shed, Staging Pens and Runs	155 7 10		159 10 4
Steward and Assistants	40 16 1		40 17 6
Judges	11 8 0		6 11 0
Prizes	126 10 0		137 10 0
Printing, Stationery, Carriage, etc.	17 3 3		23 17 6
		351 5 2	368 6 4
SHOEING.			
Prizes	48 0 0		53 10 0
Judges	13 13 6		13 6 4
Anvils, Forges, Coals, Horses, Printing, etc. ..	21 3 6		23 19 7
Shedding	84 0 10		72 4 0
Steward and Assistants	26 18 0		16 12 2
Exhibition of Models	15 0 0		15 0 0
		208 15 10	194 12 1
NATURE STUDY and HANDICRAFTS.			
Pavilions and Staging	393 15 3		162 14 6
Stewards and Assistants	12 15 6		11 4 10
Printing, Postage, Carriage, etc.	4 8 3		4 18 6
		410 19 0	178 17 10
FORESTRY.			
Pavilion and Staging	102 9 5		111 5 5
Steward, Judge and Assistants	15 7 4		15 15 10
Printing, Postage, etc.	4 4 6		4 11 3
Prizes, Grants and Demonstrator	43 17 9		65 17 2
		165 19 0	197 9 8
MUSIC.			
Band Stand, Chairs, etc.	46 11 0		39 5 11
Band and Expenses	135 0 0		116 11 0
Steward and Assistants	19 16 6		13 12 10
		201 7 6	169 9 9
SMALL HOLDINGS and ALLOTMENTS.			
Judges	3 3 8		12 11 11
Printing, etc.	3 10 9		1 13 [illegible]
Prizes			64 0 [illegible]
		6 14 5	78 5
Carried forward		11,944 13 6	

R.

CASH ACCOUNT—*Continued.*

RECEIPTS.				1925. MAIDSTONE.						1924. TAUNTON.		
				£	s.	d.	£	s.	d.	£	s.	d.
Brought forward							8,050	16	4			
CHEESE and BUTTER.												
Entry Fees and Fines				33	8	6				89	10	0
Sales				13	6	3				15	12	3
Special Prizes										17	0	0
							46	14	9	122	2	3
WORKING DAIRY.												
Entry Fees, Competitions .	£15	2	0							29	16	6
,, Tests	45	10	0							54	0	0
				60	12	0				83	16	6
Sales of Produce				39	1	11				61	17	1
Special Prizes, etc.										20	0	0
							99	13	11	165	13	7
CIDER.												
Entry Fees				7	17	6				12	18	0
Special Prizes				5	0	0						
							12	17	6	12	18	0
HOPS.												
Entry Fees				9	15	0						
Special Prizes				75	0	0						
							84	15	0			
ADMISSIONS.												
Admissions at 5/-				461	0	0				482	5	
,, ,, 4/-				695	12	0				1,848	0	0
,, ,, 3/-				1,006	15	0				2,483	11	0
,, ,, 2/6				4	17	6				8	2	6
,, ,, 2/-				2,306	12	0				1,486	2	0
,, ,, 1/6				41	2	0				99	7	6
Schools, etc.				131	10	3				85	5	0
Season Tickets and Motors				67	2	6				176	3	9
							4,714	11	3	6,668	16	9
Carried forward							13,009	8	9			

CASH ACCOUNT—*Continued.*

Cr.

PAYMENTS.	1925. MAIDSTONE. £ s. d.	1925. MAIDSTONE. £ s. d.	1924. TAUNTON. £ s. d.
Brought forward		11,944 13 6	
HORTICULTURE.			
Gratuities to Exhibitors	150 0 0		149 2 3
Pavilion and Staging	175 1 7		161 0 8
Steward and Assistant, Printing, etc. .. .	21 5 10		21 5 3
		346 7 5	331 8 2
CHEESE and BUTTER.			
Judges	11 12 10		10 2 2
Prizes	113 0 0		147 0 0
Stewards and Assistants	20 15 10		17 14 3
Pavilion and Staging	80 19 2		98 3 1
Printing, Stationery, Carriage, etc.	5 2 0		5 18 6
		231 9 10	278 18 0
WORKING DAIRY.			
Stewards and Assistants	76 7 8		60 9 5
Judges and Demonstrators	54 14 9		54 3 11
Buildings	245 8 7		248 13 11
Clean Milk Demonstrations	38 7 9		37 3 6
Printing, Stationery, Postage, etc.	6 13 9		10 8 0
Utensils, Carriage, etc.	79 16 5		93 12 7
Prizes	45 2 9		51 18 9
Coal, Salt, Ice, etc.	6 17 3		13 9 6
Milk and Cream	22 11 0		75 2 4
Purchase of Plant	4 6 0		
		580 5 11	645 1 11
CIDER.			
Pavilion and Staging	34 13 0		34 17 10
Steward and Assistants	28 2 0		23 15 5
Judge	5 1 0		4 0 0
Prizes	70 0 0		60 0 0
Analyses, Carriage, Printing, etc.	23 12 0		30 7 9
		161 8 0	153 1 0
HOPS.			
Pavilion and Staging	11 4 4		
Prizes	75 0 0		
Printing, etc.	2 13 3		
		88 17 7	
BEES.			59 4 8
Carried forward		13,353 2 3	

Dr. CASH ACCOUNT.—*continued.*

	RECEIPTS.	1925. Maidstone. £ s. d.	1925. Maidstone. £ s. d.	1924. Taunton. £ s. d.
	Brought forward		13,009 8 9	
	SHOW (Unapportionable).			
	Sales, Fittings, etc.	654 10 2		610 18 5
	Contract Premiums	861 18 7		632 7 3
	Cloak Rooms, Lavatories, etc.	80 8 7		93 5 2
			1,596 17 4	1,336 10 10
	SUBSCRIPTIONS FROM TOWNS,			
	Watford for 1926 Show		800 0 0	1,600 0 0
			15,406 6 1	19,447 8 11
	Sale of War Loan Stock		1,006 9 6	
	Queensland Stock redeemed			1649 3 11
	Deposit returned		1,500 0 0	4,500 0 0
	Balance in Bank, January 1st		974 4 2	350 0 6
		£	18,886 19 9	25,946 13 4

CASH ACCOUNT—*continued.* Cr.

PAYMENTS.		1925. Maidstone.		1924. Taunton.
		£ s. d.	£ s. d.	£ s. d.
Brought forward			13.353 2 3	
PUBLIC ANNOUNCEMENTS.				
Advertising		301 0 0		306 6 6
Billposting		319 0 0		235 0 0
Railway Placards		69 1 6		78 7 6
Printing		65 5 2		53 7 9
			754 6 8	673 1 9
SHOW (Unapportionable).				
Official Buildings, etc.		1,925 1 7		1,938 4 0
Hoarding		457 7 3		329 4 1
Carriage of Plant		182 11 3		256 6 5
Stand Fittings		235 12 5		259 3 4
Insurance		52 10 6		62 6 8
Furnishing Official Buildings, etc.		32 12 6		31 2 6
Mess Room, Allotment Expenses, etc.		21 18 6		20 19 4
Gatekeepers, Yardmen and Messengers		225 13 9		184 9 1
Stewards of Finance and Treasurer		47 7 8		25 17 1
Inspector of Cash and Assistant		51 6 6		49 14 10
Secretaries' Expenses and Finance and Treasurer's Clerks		49 13 0		43 14 4
Police, Badges, etc.		4 1 6		266 12 4
Catalogues for Press and Officials		16 3 0		15 9 6
Purchase of Plant		50 8 5		23 16 9
Printing, Stationery and Commission on Season Tickets		100 2 5		109 6 3
Telegraph and Telephone		55 14 8		49 8 10
Council Grants		15 5 0		5 0 0
			3.523 0 11	3,670 15 4
EXPERIMENTS.				
Cider—Grant to Cider Institute		100 0 0		100 0 0
Rough Pastures.				
Lime and Manures	2 5 3			50 12 5
Inspection	28 14 10			7 12 6
		31 0 1		58 4 11
			131 0 1	158 4 11
			17,761 18 11	18,447 8 11
INVESTMENTS and DEPOSIT			43 0 0	6,525 0 3
Balance in Bank, December 31st			1,082 0 10	974 4 2
		£	18,886 19 9	25,946 13 4

January 18th, 1926.

I hereby certify that I have examined the foregoing accounts for the year ending December 31st. 1925, compared the payments entered with the vouchers, and found them all in order and correct.

F. CLIFFORD GOODMAN, F.C.A.,
Auditor.

Passed by Council,
January 26th, 1926.

F. H. STORR, Secretary.

ASSETS AND LIABILITIES ACCOUNT TO DECEMBER 31st, 1925, WITH COMPARISON FOR 1924.

ASSETS.

	1925. MAIDSTONE. £ s. d.	1924. TAUNTON. £ s. d.
INVESTMENTS	21,854 15 0	23,206 2 7
CASH ON DEPOSIT		1,500 0 0
FUND FOR REPLACEMENT OF CAPITAL	45 0 10	43 3 11
SHOW PLANT	1,236 6 1	1,318 19 0
HOUSE PROPERTY £633 10 7		633 10 7
FURNITURE AND FITTINGS 164 8 3		168 12 11
	797 18 10	802 3 2
ACCOUNTS DUE		12 12 0
SUBSCRIPTION ARREARS	153 5 0	109 17 0
JOURNAL SALES	2 10 0	2 10 0
	24,089 15 9	26,995 7 8
BALANCE IN BANK, December 31st	1,082 0 10	974 4 2
	£25,171 16 7	27,969 11 10

£ s. d.	STOCK.	Actual Cost £ s. d.	Market Value £ s. d.
1,568 1 6	New Zealand 3½ %, 1940	1,500 0 0	1,317 3 6
3,099 11 1	War Loan, 5% 1929/47	4,809 19 6	3,115 1 0
348 15 6	Do. to replace capital lost by conversion of Consols	337 8 3	350 10 3
7,538 15 1	India 3%	7,277 5 1	4,354 15 3
4,057 16 0	New S. Wales 4%, 1933	4,000 0 0	3,692 12 0
1,500 0 0	Can. Pac. Ry. 4% Deb.	1,576 2 6	1,185 0 0
1,036 3 3	S. Australian 4% 1940/60	1,000 0 0	849 13 0
6,000 0 0	Conversion 3½% Inscribed	4,747 16 0	4,515 0 0
2,500 0 0	N. S. Wales 5% 1935/55	2,483 0 3	2,475 0 0
		27,731 11 7	21,854 15 0

LIABILITIES.

	1925. MAIDSTONE. £ s. d.	1924. TAUNTON. £ s. d.
WATFORD MEETING ..	800 0 0	800 0 0
JOURNAL, cost of, estimated at	550 0 0	550 0 0
DUE TO FUND FOR REPLACEMENT OF CAPITAL	45 0 10	43 3 11
INCOME TAX DEMAND ..	112 3 6	57 7 6
ACCOUNTS UNPAID	250 0 0	
	1,757 4 4	1,450 11 5
BALANCE	23,414 12 3	26,519 0 5
	£25,171 16 7	27,969 11 10

January 18th, 1926.

I hereby certify that I have audited the above Balance Sheet, and that, in my opinion, it is correct, and shows the true position of the Society's affairs according to the Books. The securities for the Society's Investments have been produced to me, and I have found them in order. The various Stocks have been valued by the Society's Bankers.

F. CLIFFORD GOODMAN, F.C.A., Auditor.

Passed by Council,
January 26th, 1926.

F. H. STGRR, Secretary.

Bath and West and Southern Counties Society.

STATEMENT SHOWING FINANCIAL RESULT OF THE MAIDSTONE (1925) SHOW.

Printed Financial Statements.				
Page		£ s. d.	£ s. d.	£ s. d.
clxv	Show Payments as per Summary		15,322 12 2	
clxxvi	Accounts unpaid		250 0 0	
			15,572 12 2	
	Less Plant Purchased—			
clxxiii	Dairy .. £4 6 0			
clxxv	Show .. 50 8 5			
		54 14 5		
	Less 10% for depreciation ..	5 9 6		
			49 4 11	
				15.523 7 3
clxiv	Show Receipts as per Summary		13,292 9 1	
clxviii	Less 1924 Account received in 1925 ..		12 12 0	
				13.279 17 1
	Loss on 1925 Show			£2.243 10 2

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY,

FOR THE

Encouragement of Agriculture, Arts, Manufactures and Commerce.

LIST OF MEMBERS, 1926.

PATRON.

HIS MOST GRACIOUS MAJESTY THE KING.

PRESIDENT.

THE RIGHT HON. THE EARL OF CLARENDON.

TRUSTEES.

THE MOST HON. THE MARQUIS OF BATH, K.G.
SIR J. SHELLEY, BART.
H. B. NAPIER, ESQ.

Names thus (*) distinguished are Governors.

Names thus (†) distinguished are Life Members.

*** *Members are particularly requested to make the Secretary acquainted with any errors in the names or residences.*

Name.	Residence	Sub-scriptions £	s.	d.
*†His Most Gracious Majesty the King	Windsor Castle	..		
*†Wales, H.R.H. Prince of K.G.	St. James' Palace, London	..		
Ackers, Chas. P.	Huntley Manor, Gloucester	1	0	0
Ackers, Miss C. V.	Hellings, Wiveliscombe	1	0	0
Ackland, J.	Francis Court, Broadclyst, Exeter	1	0	0
Acland, Alfred Dyke	..	1	0	0
†Acland, Right Hon. Sir Arthur H. Dyke	85, Onslow Square, London, S.W.7	..		
Acland, Right Hon. F. Dyke	Killerton, Exeter	1	0	0
Adams, E. C.	The Cedars, Trowbridge, Wilts	1	0	0
Aldridge, D.	Sketchley Hall Farm, nr. Hinckley, Leicester	1	0	0
Alexander, Hubert	5, High Street, Cardiff	1	1	0
Allen, A.	Chesterblade, Shepton Mallet	1	0	0
Allen & Foster	Corn and Seed Merchants, Shepton Mallet	1	1	0
Allen, J. R.	Cheese Merchant, Shepton Mallet	1	1	0

Name	Residence	Subscriptions		
		£	s.	d.
Allen, W. T.	Bradley House, West Pennard, Bridgwater	1	0	0
Allison, F.	Newbiggin, Penrith, Cumberland	1	0	0
Allott, Major P. B.	Little Ashton, Codford, Wilts	1	0	0
Allsebrook, A.	Frenches Farm, Mark Cross, Sussex	1	1	0
Ames, Mrs. O.	Blackdown, Upham, Southampton	1	0	0
Amesbury, A.	Loxton, Axbridge	1	1	0
Angerstein, J. R.	Holbrook House, Wincanton	1	0	0
Anglo-Continental Guano Works	Dock House, Billiter Street, E.C.3.	1	0	0
Anglo-Swiss Condensed Milk Company	Chippenham	1	0	0
*Ansdell, C. W.	Leckford Abbas, Stockbridge, Hants.	2	0	0
†Aplin, R. M. S.	12, Sydney Place, Bath		..	
Argent, W. A.	Ghyll Manor, Rusper, Sussex	1	0	0
Armitage, T. C.	Dean Court, Taunton	1	1	0
Armitage, Mrs.	Dean Court, Taunton	1	1	0
Armstrong, E. G.	Sand Farm, Kew Stoke, Somerset	1	0	0
Arnold and Sons	52, Wigmore Street, London, W.	1	0	0
†Ashcomb, Lord	Denbies, Dorking		..	
†Ashcroft, W.	13, The Waldrons, Croydon		..	
Asher, S. G.	Ascot Place. Ascot	1	0	0
Associated Manufacturers Co.	72-80, Mansell Street, Aldgate, E.1.	1	0	0
Atkinson, Brig.-Gen. B., C.B., C.M.G.	Mistley Hall, Manningtree, Essex	1	0	0
*Astor, Lord	Cliveden, Taplow, Bucks	2	0	0
Austin, E. A.	Baltonsborough, Glastonbury	1	1	0
†Avebury, Lord	High Elms, Hayes, Kent		..	
†Aveling, Thomas L.	Rochester		..	
Avon Manure Company (Ld.)	St. Philip's Marsh, Bristol	1	0	0
Awdry, E. M.	Chippenham, Wilts	1	1	0
Awebridge & Co. (Ld.), c/o Messrs. Beyer, Peacock & Co. (Ld.)	Abbey House (Room 338), Victoria Street, Westminster, S.W.1.	1	1	0
Badcock, H. Jefferies	Broadlands, Taunton	1	0	0
Badock, S. H.	Holmwood, Westbury-on-Trym, Bristol	1	1	0
Bagnall, O. R.	The Howsells, Malvern Link	1	0	0
Bainbridge, Mrs. R. C.	Elfordleigh, Plympton, Devon	1	0	0
†Baker, Hiatt C.	Oaklands, Almondsbury		..	
Bamfords (Ld.)	Uttoxeter	1	0	0
Barber, J. Guttridge	Fylde House, Oxford Road, Exeter	1	0	0
Barford & Perkins (Ld.)	Peterborough	1	0	0
Barham, G. T.	Sudbury Park, Wembley, Middlesex	1	1	0
*Barker-Hahlo, H.	.. ..	2	0	0
Barnes, Major-Gen. Sir R. W. R., K.C.B., D.S.O.	Oakley, Stoke Canon, near Exeter	1	0	0
Barnett, D. P.	Walterston, Llancarvan, Cowbridge	1	0	0

Name	Residence	Subscriptions		
		£	s.	d.
Barrett, Mrs. D.	Eastbrook, Trull	1	1	0
Barrett, D.	Eastbrook, Trull, Taunton	1	1	0
Barry, Lieut.-Col. A. P.	Baltonsborough, Glastonbury	1	0	0
Barstow, J. J. J.	The Lodge, Weston-super-Mare	1	1	0
Basic Slag and Phosphate Co. (Ld.)	69, Queen Victoria Street, London, E.C.4.	1	1	0
Bassett, A. F.	..	1	0	0
Bastard, H. E.	Tinten Manor, St. Tudy, S.O., Cornwall	1	0	0
*†Bath, Marquis of, K.G.	Longleat, Warminster	..		
Bath Gas Company	Bath	1	0	0
Bathurst, Major Sir F. Hervey, Bart., D.S.O.	Somborne Park, King's Somborne, Hants	1	1	0
Bathurst, Lady K. Hervey	Somborne Park, King's Somborne, Hants	1	1	0
*†Batten, Major H. C., D.S.O.	Aldon, Yeovil	..		
Batten, Col. Cary	Abbotsleigh, Bristol	1	0	0
Batten-Pooll, R. H.	Road Manor, Bath	1	0	0
†Baxendale, J. Noel	Froxfield Green, Petersfield	..		
Beak, J. D.	Maiden Bradley, Bath	1	1	0
Beatty, A. Chester	Calehill Park, Little Chart, Kent	1	0	0
Beauchamp, Sir F. B.	Woodborough House, Peasedown St. John, Bath	1	0	0
Beauchamp, L. B.	Norton Hall, near Bath	1	0	0
*Beaufort, Duke of	The Cottage, Badminton, Glos.	2	0	0
Bell, Lieut.-Colonel M. G. E.	Bourne Park, near Canterbury	1	0	0
Benett-Stanford, Capt. J.	Hatch House, Tisbury	1	0	0
Bennett, Brothers	*Journal* Office, Salisbury	1	1	0
Bennett, R. A.	Thornbury, Glos.	1	0	0
Bentall, Edward H. & Co.	Heybridge, Maldon, Essex	1	0	0
Benyon, H. A.	Englefield House, Reading	1	1	0
*Benyon, J. Herbert	Englefield House, Reading	5	0	0
Berry, Grosvenor	Mount Bures, Bures, Suffolk	1	0	0
Berry, H. W.	Blackmoor Farm, Langford, near Bristol	1	0	0
Berryman, F. H.	Field House, Shepton Mallet	1	1	0
Bessant, W.	Skinners Farm, Woolland, Blandford, Dorset	1	0	0
Best, Major T. G.	East Carleton Manor, Norwich	1	0	0
†Best, Mrs. W.	Vivod, Llangollen	..		
†Best, F. C.	Vivod, Llangollen	..		
†Best, H. G.	Vivod, Llangollen	..		
†Best, Capt. W.	Vivod, Llangollen, N. Wales	..		
Best, Hon. J. W., O.B.E.	Hincknowle, Melplash, Dorset	1	0	0
Benyon, Sir J. W., Bart., C.B.E.	Merthyr House, Cardiff	1	1	0
Bide, S. and Sons	Pedigree Pig Farm, Farnham, Surrey	1	0	0

Name	Residence	Sub-scriptions		
		£	s.	d.
Birdwood, Lt.-Col. G. C.	16, Gloucester Road, Redhill	1	0	0
Birmingham, C.	Nutscale, The Parks, Minehead	0	10	0
Bishop, Major J. H.	Dynevor Estate Office, Ammanford, S. Wales	1	0	0
†Blackburn, H. P.	Donhead Hall, Salisbury		..	
†Blackstone, G. M.	Blackstone & Co., Ld., Stamford		..	
Blake, Col. M. Lock	Bridge, S. Petherton	1	0	0
Bland, V. S.	Estate Office, Foxhill, Wanborough, Wilts	1	0	0
Blathwayt, R. W.	Dyrham Park, Chippenham	1	1	0
Blathwayt, Rev. W. E.	Dyrham Rectory, Chippenham	1	0	0
Blay, G.	New Malden, London, S.W.	1	0	0
†Bledisloe, Lord, K.B.E.	Lydney Park, Gloucester		..	
Blight, G.	Tregonning, Breage, Helston	1	0	0
Blinks, A.	Alma House, Hawkhurst, Kent	1	1	0
Blinman, F. R.	Auctioneer, Farrington Gurney, Bristol	1	0	0
*Blythswood, Lord	Penrice Castle, Reynoldston, S.O., Glamorgan	2	0	0
Blythswood, Lady	Penrice Castle, Reynoldston, S.O., Glamorgan	1	0	0
Board, W. R.	Great Frampton, Llantwit Major, Cardiff	1	0	0
Body, J. B.	Hindhead Court, Hindhead, Surrey	1	1	0
*†Boles, Lt.-Col. Sir Dennis F., Bart., C.B.E., D.L.	Watts House, Taunton		..	
*Boles, G. F.	17th Lancers, Alival Barracks, Tidworth	2	0	0
Bolitho, R. F.	Ponsandane, Penzance	1	1	0
Bolitho, T. R.	Trengwainton, Hea Moor, Cornwall	1	1	0
Bond, A. E.	Wannerton, Kidderminster	1	0	0
Bond, E. (W. Evans & Co.)	Hele, Cullompton	1	1	0
Boscawen, Rev. A. T.	Ludgvan Rectory, Long Rock, R.S.O., Cornwall	1	0	0
Boscawen, Townshend E.	2, Old Burlington Street, London, W.1	1	0	0
Bouverie, H. P.	Brymore, Bridgwater	1	0	0
†Bowen-Jones, Sir J., Bart	The Woodlands, Bicton, near Shrewsbury		..	
†Bowerman, Alfred	Sydney Villa, Broadclyst, Exeter		..	
Braby, F. & Co. (Ld.)	Ashton Gate Works, Bristol	1	0	0
Bracher, H. F.	Plan Farm, Ryash, Kent	1	1	0
Bracher, Mrs. R. L.	Plan Farm, Ryash, Kent	1	1	0
Bradford, Thomas & Co.	Salford, Manchester	1	0	0
*Braithwaite, T. S.	Durley Hill, Keynsham, Somerset	2	0	0
Brasnett, A. W., Veterinary Surgeon	Wells	1	0	0
Brassey, Col. E., M.V.O.	Dauntsey Park, Chippenham	1	0	0
*†Brassey, H. L. C.	Apethorpe Hall, Wansford, Northants		.. ..	
†Brassey, Capt. R. B.	.. ..		..	
Brenton, W. (Ld.)	St. Germans, Cornwall	1	0	0

Name	Residence	Sub-scriptions £	s.	d.
Briggs, Mrs. H.	The Grange, North Stoke, Wallingford, Berks.	1	1	0
Bristol Times and Mirror, Proprietors of	Bristol	1	0	0
Brittan, Col. R., D.S.O.	Failand Hill, Failand, Bristol	1	0	0
Britten, Forester	Kenswick Manor, Worcester	1	0	0
Britten, W. C.	Dungeon Farm, Croscombe	1	0	0
†Brocklehurst, H. D.	Sudeley Castle, Winchcombe		..	
Brockman, F. D.	Broxmore, Herts	1	0	0
Broughton, B. R.	Manor Farm, North Perrott, Crewkerne	1	0	0
Brown, A. and J.	Haydon Hill, Aylesbury	1	0	0
Brown, F. E.	1,403, Neath Road, Swansea	1	0	0
Browning, T.	Nash End Farm, Eastington, Stonehouse, Glos.	0	10	0
Browning, W.	Nash End Farm, Eastington, Stonehouse, Glos.	0	10	0
†Bruford, E. J.	Nerrols, Taunton		..	
Bruford, R.	Nerrols, Taunton	1	0	0
Brymer, W. J.	West Down Lodge, Winchester	1	0	0
Buchanan, W. G.	Manor House Farm, Abergavenny	1	0	0
Buck, D.	White House, Little Mill, Pontypool	1	0	0
Buckingham, Rev. C. L.	Bickleigh Rectory, near Tiverton	1	1	0
†Buckingham, Rev. Preb.	The Rectory, Doddiscombsleigh, Exeter, Devon		..	
Buckingham, Capt. F. R.	Dishcombe, South Tawton, near Okehampton	1	0	0
Buckley, S. W.	Danygraig, Pembrey	1	0	0
Budd, Felix S.	Clarendon House, Stow Park, Newport, Mon.	1	0	0
Budd, H. C.	The Paddock, Shepton Mallet	1	0	0
Budd, J. E.	Tidebrook Manor, Wadhurst, Sussex	1	0	0
Bullows, Miss M. A.	Metchley, Barlows Road, Edgbaston, Birmingham	1	1	0
Burdge, J. H.	Yatton, near Bristol	1	1	0
Burnard & Algar	Plymouth	1	0	0
Burrell, C. and Sons	St. Nicholas Works, Thetford	1	0	0
†Bush, H. G.	The Grove, Alveston, Glos.		..	
Bush, Mrs. L. E.	St. Mary's, Atlantic Road, South, Weston-super-Mare	1	1	0
Busk, Mrs.	Wraxall Manor, Cattistock, Dorset	1	0	0
*Bute, The Marquis of	The Castle, Cardiff	2	0	0
Butler, E. M.	Combe Grove, Monkton Combe, Bath	1	0	0
Butler, W.	Gatcombe Farm, Flax Bourton, Bristol	1	0	0
†Buxton, Major Gerard	Tockenham Manor, Wootton Bassett, Wilts			

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Cable, Lord	Lindridge, near Teignmouth	1	1	0
Cadozo, C. H.	Sedgewell House, Chudleigh, Devon	1	0	0
Caesar, H. and J.	Knutsford, Cheshire	1	0	0
Calley, Miss	Burderop Park, Swindon	1	0	0
†Calmady-Hamlyn, Miss	Pearroc Vean, Buckfast, S. Devon	..		
Campbell, Major D., D.S.O.	Lady's Wood, Malmesbury, Wilts	1	0	0
Campbell, J.	31, St. Albans Road, Swansea	1	0	0
Candy, T. C.	Woolcombe, Cattistock, Dorset	1	0	0
Carew, C., M.P.	Collipriest, Tiverton	1	0	0
Carrington, H. B.	Blacklands, Crowhurst, Sussex	1	0	0
†Carter, E.	East Upton, Ryde, Isle of Wight	..		
Carter, G. V.	Waterston Manor, Dorchester	1	1	0
Carter, J. R.	Sand Point Farm, Kewstoke, Weston-super-Mare	1	0	0
Carter, J. & Co.	Raynes Park, London, S.W.	1	0	0
Cartridge, W. T. B.	Sidbury, Worcester	1	0	0
Cartwright, Miss M. W.	North Curry, Taunton	1	1	0
Cartwright, T. G.	30, Beaufort Gardens, London, S.W.	1	0	0
†Cary, John	The Priory, Shepton Mallet	..		
†Cary, W. H.	Junior Constitutional Club, Piccadilly, London, W.1.	..		
Cater, Mrs. Bertram	Bentworth Lodge, Alton, Hants	1	1	0
Cattybrook Brick Co. (Ld.)	Provident Buildings, 15, Clare Street, Bristol	1	1	0
Cave, Captain A. L.	Sherwood, Newton St. Cyres, Exeter	1	0	0
Cave, Sir C. H., Bart	Sidbury Manor, Sidmouth	1	0	0
Cave, E. C.	Paccombe, Sidford, Sidmouth, Devon	1	0	0
Cave, Mrs. E. C.	Paccombe, Sidford, Sidmouth, Devon	1	0	0
Cecil, Lt.-Col. R. E., D.S.O.	Passford House, Lymington, Hants.	1	0	0
Chester, J. & Co.	York House, Newmarket	1	0	0
Chichester, H.	Verbere, Willand, Cullompton	1	0	0
†Chick, J. H.	Wynford Eagle, Maiden Newton, Dorset	..		
†Chick, W. D.	Compton Valence, Dorchester	..		
Chivers and Son	Histon, Cambridge	1	0	0
Christie, A. L.	Tapeley Park, Instow, N. Devon	1	1	0
Chubb, Sir C., Bart.	Bapton Manor, Codford, Wilts	1	0	0
Churchill, The Viscount, G.C.V.O.	Carlton Club, Pall Mall, London, S.W.1.	1	0	0
†Churchward, F.	Hill House, Stoke Gabriel, near Totnes	..		
Clare, A. J.	Beach House, Wells	1	0	0
*Clarendon, Earl of	The Grove, Watford	2	2	0
Clark, H.	Keward House, Wells	1	0	0
Clark, H. B.	Butleigh, Glastonbury	1	0	0
*†Clark, J. J.	Goldstone Farm, Hove, Sussex (Hon. Local Sec., 1885)	..		
Clark, W. S.	Street, Glastonbury	1	0	0
†Clarke, C. S.	Tracy Park, near Bath	..		

Name.	Residence.	Subscriptions. £	s.	d.
Clarke, J. W.	Bridwell, Cullompton	1	0	0
Clatworthy, E.	Cutsey, Trull, Taunton	1	1	0
*Clifden, Viscount	Lanhydroc, Bodmin	2	0	0
Clinton, Lord	Heanton Satchville, Dolton, N. Devon	1	0	0
Clive, Capt. E. A. B.	Brympton, near Yeovil, Somerset	1	0	0
Cobb, H. M.	Higham, Rochester	1	0	0
Cobb, R.	Watlynge, near Rochester	1	0	0
Cockburn, A. P.	Stanborough, Halwell, S. Devon	1	1	0
Cole, J. J. B.	Combe Manor, Hungerford	1	0	0
Colebrook, H. J.	Fulmer Hall, Fulmer, Bucks	1	0	0
Coleridge, Hon. G. D.	The Chanter's House, Ottery St. Mary, Devon	1	0	0
Collet, Sir Mark, Bart.	St. Clare, Kemsing, Sevenoaks	1	1	0
Collins, A. H.	Manor Farm, Codford St. Peter, Wilts.	1	0	0
Collins, J. S.	St. George's Lodge, Oldfield Park, Bath	1	1	0
Colman, Sir J., Bart.	Gatton Park, Surrey	1	0	0
Colmer, Jas. (Ld.)	Union Street, Bath	1	0	0
Colston, Lieut.-Colonel the Hon. E.	Hamilton House, Ashburn Place, S.W.7	1	0	0
Colville, H. K.	Hillmarton Lodge, Calne, Wilts.	1	0	0
Cook, R.	Widhayes, Tiverton	1	0	0
Cookson, Mrs. Freville	Chute Standen, Andover	1	0	0
Cookson, Miss W.	Highlands, Spencers Wood, Reading	1	0	0
Cooling, G. and Sons	Northgate Street, Bath	1	1	0
Cooper, Sir G., Bart	Hursley Park, Winchester	1	0	0
Cooper, Major R. W.	Rush Court, Wallingford	1	0	0
Cope, W.	Southerndown, Glam.	1	1	0
Corbet, E. W. M.	Bute Estate Office, Cardiff	1	1	0
Corbett, S. E.	Perseverance Iron Works, Shrewsbury	1	0	0
†Corner, H. W.	.. ..		..	
Cornish, Dr.	Pixford, Taunton	1	0	0
†Cornwallis, Col. F. S. W., C.B.E., D.L.	Linton Park, Maidstone		..	
Corp, R.	Woodford Farm, Wells	1	0	0
Cory, Sir Clifford J., Bart., D.L.	Llantarnam Abbey, Mon.	1	0	0
Cory, W.	Fullerton Manor, Andover	1	0	0
Cory-Wright, Miss B. G.	Ayot Place, Welwyn, Herts.	1	0	0
Coryton, Capt. J. T.	Pentillie Castle, St. Martin's, R.S.O.	1	0	0
†Cotterell, Sir J. R. G., Bart.	Garnons, Hereford		..	
Cotton, R. W.	Baltonsborough, Glastonbury	1	0	0
Coultrip, A. W.	Norwood Manor, East Church, Kent	1	0	0
Couper, G. R. C.	The Barton, Instow, N. Devon	1	0	0
†Courage, Raymond	Shenfield Place, Brentwood, Essex		..	
Cousins, Chas.	Jenkins, Stisted, Braintree, Essex	1	0	0
Cowie, G. A.	39, Victoria Street, Westminster, London, S.W.1.	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Cox, S. V.	Pwlpen Farm, Bishpool, Newport, Mon.	0	10	0
Cox & Sons	47, City Road, Cardiff	1	0	0
Crawford, H. W.	Lloyd's Bank Chambers, Swansea	1	0	0
Criddle, A. M. B.	Worle, Weston-super-Mare	1	0	0
Cridlan, J. J.	Maisemore Park, Gloucester	1	0	0
Croker, W. J.	Grapnel Farm, Dinder, Wells	1	0	0
Crompton's Pure Salt Brick Co. (Ld.)	255, Chapel Street, Salford	1	0	0
*Cross, Carlton	Wyke Hall, Gillingham	2	0	0
Cross, G.	Smart's Hill House, Penshurst, Kent	1	0	0
Cross, Hall & Hall	Nether Hall, Bradfield, Manningtree, Essex	1	0	0
Crowther, F. C. (Co-op. Wholesale Society)	1, Balloon Street, Manchester	1	0	0
Crutchley, P. E.	Limminghill Lodge, Ascot	1	0	0
Cumber, W. J.	Theale, Berks	1	0	0
Cuming, Edwin J.	Langhill, Moretonhampstead, Devon	1	0	0
Cundall, H. M., I.S.O., F.S.A.	4, Marchmont Gardens, Richmond Hill, Surrey	1	0	0
†Curre, E.	Itton Court, Chepstow		..	
Currie, L.	Minley Manor, Farnborough, Hants.	1	0	0
Dairy Supply Company (Ld.)	Museum St., Bloomsbury, London, W.C.9	1	0	0
Dalrymple, Major F. B.	Bartley Lodge, Cadnam, Hants	1	0	0
Daniel, F. W. A.	Higher Ford, Wellington, Somerset	1	0	0
†Daniel, H. T.	The Red House, Cannington, Bridgwater		..	
Darby, A. E. W.	Little Ness, Shewsbury	1	0	0
Darby, E.	Liscombe, Dulverton	1	0	0
†Darell, D.	Hillfield House, Stoke Fleming, near Dartmouth		..	
Davey, Sleep & Co. (Ld.)	Excelsior Plough Works, Plymouth	1	0	0
†Davey, T. R.	Wraxall Court, near Bristol		..	
David & David	Old Bank Chambers, 27, High Street, Cardiff	1	0	0
Davies, D.	"Porth Pean," Queen's Road, Sketty, Swansea	1	1	0
*Davies, D. G.	Fir Grove, Morriston, Swansea	2	2	0
Davies, F. W.	Wesfra, Bishopston, Glam.	1	0	0
Davies, M. J.	Killay Fach Farm, Killay, Glam.	1	0	0
Davies, T. W.	The Cefn, Pontypridd	1	0	0
Davis, E. K.	Little Stoke, Patchway, near Bristol	1	0	0
†Davis, H. J.	Sutton Montis, Sparkford, S.O., Somerset		..	
Davis & Co.	75, George Street, Oxford	1	0	0
Daw, J. E.	4, Louisa Terrace, Exmouth	1	1	0
Dawnay, Major-Gen. G. F.	Longparish House, Whitchurch, Hants.	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Dawson, Miss N.	Holne Park, Ashburton, S. Devon	1	0	0
Day & Sons (Ld.)	Crewe	1	0	0
*De La Warr, Earl	Withyam, Sussex	2	0	0
*†Debenham, E. R.	..		..	
De Laval Chadburn Co., Ld.	Wellington House, Buckingham Gate, London, S.W.1.	1	0	0
†Delme-Radcliffe, Lt.-Col. A., D.S.O.	Shenley House, Headcorn, Kent		..	
De Rothschild, Mrs. L.	Exbury, Southampton	1	1	0
Dening & Co.	Chard, Somerset	1	0	0
Denning, R. J.	Little Ashwell Farm, Ilminster	1	0	0
Dennis, S.	Latton, Cricklade, Wilts	1	0	0
†Devas, H. G.	Ightham Warren, Sevenoaks, Kent		..	
Devenish, H. N.	Little Dunford, Salisbury	1	0	0
*Devon, The Earl of	Powderham Castle, Devon	2	0	0
Diabolo Separators (Ld.)	31-35, Bevenden Street, Hoxton, London, N.	1	0	0
Dickinson, W. F.	Kingweston, Taunton	1	0	0
Dickson & Robinson	Cathedral Street, Manchester	1	1	0
*Digby, Capt., The Lord, D.S.O., M.C. (Coldstream Guards)	Minterne, Cerne Abbas	2	0	0
Digby, Major F. J. B. Wingfield, D.S.O.	Sherborne	1	0	0
Dinam Estates Co.	The Offices, Llandinam, Montgomery	1	0	0
†Dixon, Oliver	Crescent Road, Reading		..	
†Dobson, H. V.	Bath and County Club, Bath		..	
Dodington, Lt.-Col. R. M.	Horsington Park, Templecombe	1	1	0
Dormer, Capt. C. W. C.	Rousham, Oxford	1	0	0
Dors, J. C.	Hunters Lodge, Wells	1	0	0
*Douglas, J.	Hanham Road, Kingswood, near Bristol	2	0	0
Down, H. E.	Middle Farm, Dinder, Wells	1	0	0
Drew W. (Harrison, McGregor & Co.)	Albion Iron Works, Leigh, Lancs.	1	0	0
Drummond, Col. F. D. W., C.B.E.	Cawdor Estate Office, Carmarthen	1	0	0
Duck, W. G.	Neadwood, Christon, near Exeter	1	1	0
Duckworth, Major A. C.	Orchardleigh Park, Frome	1	0	0
Dugdale, Major J. G.	The Abbey, Cirencester	1	0	0
Duncan, R.	..	1	0	0
Dunlop, I. M.	Avonhurst, Sneyd Park, Bristol	1	0	0
*Durand, Lady	Hill House, Bridstow, Ross-on-Wye	2	0	0
Eagle Range and Gas Stove Company (Ld.)	Catherine St., Aston, Birmingham	1	0	0
*Earl, H. F.	Biddenden, Kent	2	0	0
*†Eastwood, J. E.	Wade Court, Havant		..	
Eaton, G. T.	Thurston Hall, Framfield, Sussex	1	0	0

Name.	Residence.	Subscriptions. £	s.	d.
Economic Fencing Company (Ld.) (Dulcken, H. E.)	Billiter House, Billiter Street, London, E.C.3.	1	0	0
Ede, B. M.	Plurrenden, Bethersden, Ashford, Kent	1	0	0
Eden, R. H. H.	Heytesbury, Wilts.	1	0	0
†Edmondson, A.	Woodclose, Silverdale, Lancashire		..	
Edmunds, L.	Cholderton, Salisbury	1	0	0
Edwards, A. P.	Gog's House, Wedmore, Somerset	1	1	0
Edwards, E. W.	Pednor House, Chesham, Berks.	1	1	0
Edwards, R. G.	Burrington Vicarage, Bristol	1	1	0
Edwards, W. H. G.	Butcombe Court, Wrington	1	0	0
*Edwards-Ker, Lieut.-Col. D. R., O.B.E., M.A.	Principal, Seale Hayne Agricultural College, Newton Abbot	2	0	0
Eldridge, Pope & Co.	Dorchester	1	0	0
Elmhurst Farming and Trading Co. (Ld.)	Elmhurst Farm, Slinfold, Sussex	1	0	0
Elton, B. A.	Langford, near Bristol	1	0	0
Elwes, Lt.-Col. H. C., D.S.O., M.V.O.	Colesborne, Cheltenham	1	1	0
Elwes, P. F. C.		1	0	0
Emmett, Mrs. R.	Moreton Paddox, Moreton Morrell, Warwick	1	0	0
Errington, R.	Victoria Mills, Sunderland	1	0	0
Erskine, Lord, M.P.	Charlton, near Bristol	1	0	0
*Esplen, Sir John, Bart.	Hardres Court, Canterbury	2	0	0
Eustice, G. H.	Bezurrell, Gwinear, Hayle, Cornwall	1	0	0
Evans, E. W.	Crickleaze House, Chard	1	0	0
Evans, H. M. Glynn	Plasissa, Llangennech, Carmarthenshire	1	0	0
Evans, Miss P. D.	Iscoed, Ferryside, Carm.	1	1	0
Evans, R. P., J.P.	Woodhatch House, Reigate, Surrey	1	0	0
†Evan-Thomas, Commander A.	Caerwnon, Builth Wells, R.S.O.		..	
Evans, T.		1	0	0
Evan-Thomas, Admiral Sir Hugh	Charlton House, Shaftesbury	1	0	0
†Eve, Mr. Justice	Royal Courts of Justice, London, W.C.2		..	
Evelyn, Mrs	Wotton House, near Dorking	1	0	0
Everard, W. L., M.P.	Ratcliffe Hall, Leicester	1	0	0
Eyles, T. W.	Ashley Wood, Kingsdown, Box, Wilts.	1	1	0
Ezra, E.	Lock, Partridge Green, Sussex	1	0	0
*†Falmouth, Viscount	Tregothnan, Truro		..	
Fane, Major N. H.	Boyton Manor, Codford, Wilts	1	0	0
†Farmer, S. W.	Little Bedwyn, Wilts		..	
†Farwell, Major E. W.	Hylton Estate Office, Kilmersdon, Bath		..	

Name.	Residence.	Subscriptions.		
		£	s.	d.
Fastnut (Ld.)	17, Newnham Road, Wood Green, London, N.22	1	1	0
Faudel-Phillips, Major H.		1	0	0
Fenton, A. D.	Maristow, Roborough, S. Devon	0	10	0
Fenwick, M.	Abbotswood, Stow-on-the-Wold	1	1	0
Ferguson-Davies, Sir W. J., Bt.	Creedy Park, Crediton	2	0	0
Ferrand, G. F.	Clanville Lodge, Andover, Hants.	1	0	0
Ferriman, R. F.	Epping Green Farm, Little Berkhampsted, near Herts	1	0	0
Ferriman, W. R.	Bower Ashton, Bristol	1	0	0
Fewtrell, O. J.	Estate Office, Wells	1	0	0
Firth, Capt. C. P. L.	Compton Durville Manor, South Petherton, Somerset	1	0	0
Fison, J. & Co.	Ipswich	1	0	0
*Fitzgerald, Lady	Buckland, Faringdon, Berks.	2	0	0
FitzGerald, Mrs. M. M.	Marsden Manor, Cirencester	1	0	0
Fitzwalter, Lord	Goodnestone, Dover	1	0	0
Fitzwilliams, Col. E. C. L., C.M.G.	Brynteifi, Pentrecourt, Llandyssul	1	1	0
Flemming, Lt.-Col. Gordon	Winsley House, Bradford-on-Avon	1	1	0
Fletcher, Capt. A. M. T.	Margam Park, Port Talbot	1	0	0
Flower, James	Chilmark, Salisbury	1	0	0
*†Folkestone, Viscount	Longford Castle, Salisbury		..	
*Follett, J. S.	Hemyock Place, Hemyock	2	0	0
*†Forester, Capt. F. W.	Saxilbye Park, Melton Mowbray		..	
Forshaw, W. H.	Slythehurst, Ewhurst, Guildford	1	0	0
Fortune, R.	Newhouse, Cranleigh, Surrey	1	0	0
†Fortesque, J. B.	Boconnoc, Lostwithiel, Cornwall		..	
Four Oaks Spraying Machine Co. (Ld.)	Four Oaks Works, Sutton Coldfield	1	0	0
Fowler & de la Perrelle	Porter's Lane, Southampton	1	0	0
Fowler, J. & Co. (Ld.)	Leeds	1	0	0
Fox, Brothers & Co.	Wellington, Somerset	1	1	0
Fox, C. L.	Rumwell Hall, Taunton	1	0	0
Fox, Mrs. A.	Brislington House, near Bristol	1	0	0
Fox, R. A.	Yate House, Yate, Glos.	1	1	0
Foxcroft, C. T., M.P.	Hinton Charterhouse, Bath	1	1	0
French, W. T. & Son	St. Mary Street, Ladywood, Birmingham	1	0	0
Frost, E. J.	Fountain Farm, Dulcote, Wells	1	1	0
Fry, A. M.	8, Zion Hill, Clifton, Bristol	1	1	0
Fry, Cecil	Grove House, Frenchay, Bristol	1	0	0
Fry, C. A. H.	Ashton Lodge, Long Ashton, Bristol	1	0	0
Fry, H. A.	Monmouth Place, Bath	1	1	0
*Fry, J. S. & Son (Ld.)	Union Street, Bristol	2	2	0
Fryer, W. J.	Holme Park, Sonning, Berks	1	1	0
†Fuller, G. Pargiter	Neston Park, Corsham		..	
*Fuller, Major R. F.	Great Chalfield, Melksham, Wilts.	2	0	0
Fuller, Mrs. R. F.	Great Chalfield, Melksham, Wilts.	1	0	0
Fuller, S. & A.	Bath	1	0	0
Fursdon, E. S.	The Elms, Alphington	1	1	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Gale, G.	The Grove, Winterbourne, near Bristol	1	0	0
Galloway, J.	Holmsted Manor, Cuckfield, Sussex	1	1	0
Gane, P. J.	Higher Rocke Farm, Butleigh, Glastonbury	1	0	0
Gantlett, W. R. & Son	Manor Farm, Fairfield, Glos.	1	1	0
Gardiner, Sons & Co.	Nelson Street, Bristol	1	1	0
Garne, W.	Aldsworth, Northleach	1	1	0
Garne, W. T.	Aldsworth, Northleach	1	1	0
Garnett, W.	Backwell Hill House, West Town, R.S.O., Somerset	1	0	0
Garton, J. A.	Pylle Manor, Shepton Mallet, Somerset	1	0	0
Genge, M.	Stop Farm, Fonthill Gifford, Tisbury	1	1	0
Gibbins, T.	Glynfelin, Neath	1	0	0
†Gibbons, H.	The Model Farm, King's Langley, Herts.		..	
Gibbons, P. F., J.P.	Keynsham	1	1	0
†Gibbs, Major A. H.	Pytte, Clyst St. George, Exeter		..	
†Gibbs, Mrs.	Pytte, Clyst St. George, Exeter		..	
*†Gibbs, Col. The Right Hon. George A., M.P.	Tyntesfield, Bristol		..	
†Gibbs, H. M.	Barrow Court, Flax Bourton, Bristol		..	
Gibbs, Lt.-Col. W. O.	Home Farm, Barrow Gurney	1	0	0
†Gibbs, Mrs. W. O.	Home Farm, Barrow Gurney		..	
Gibson, J. T.	Warren House, Wrington	1	1	0
Gifford, G.	Lyde Green, Pucklechurch, Bristol	0	10	0
Gill, F. C.	Westland Farm, Challacombe, Devon	1	0	0
Gillingham, J. & Son	Prospect House, Chard	1	0	0
Gisborne, Col. L., C.M.G.	Lingen Hall, Brampton Bryan	1	0	0
†Gladstone, J.	Bowden Park, Chippenham		..	
Glanely, Lord	Lackham, Lacock, Wilts.	1	0	0
Glanville, F.	Poplar Farm, Westbury-sub-Mendip, Wells	1	0	0
Glencross, T.	The Paddocks, Stoke Gifford	1	1	0
Glover, J. H.	Cornwood, S. Devon	1	0	0
Glyn, Capt. Sir R. F., Bart.		1	0	0
Godfrey, J. B.	Downside Farm, Shepton Mallet	1	0	0
†Godman, C. B.	Woldringfold, Horsham		..	
Godman, J.	The Raswells, Hascombe, Godalming	1	0	0
Godwin, Warren and Co., (Ld.)	140, Redcliffe Street, Bristol	1	0	0
Goemans, H. E.	Homewood Lodge, Chislehurst, Kent	1	1	0
Goodchild, G. A.	The Oak House, Great Yeldham, Essex	1	1	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Goodman, A. & Sons	3, Hammett Street, Taunton, and Broad St. House, London, E.C.	1	0	0
*Gordon, Major R.G.S., M.C.	Langton House, Blandford	2	0	0
Gordon, G. H.	The Barn House, Sherborne	1	0	0
†Gorringe, Hugh	Kingston-by-Sea, Brighton		..	
Gosling, R. H.	Hawthorne Hill, Bracknell	1	0	0
Graham, J. C.	Clwyd Hall, nr. Ruthin, N. Wales	1	0	0
Graham-Clarke, Capt. J. E. H.	Froceston Manor, Stonehouse, Glos.	1	0	0
Grant-Ives, C. E.	Bradden House, Towcester, Northamptonshire	1	0	0
Grant, W. J.	42, Llanthewy Rd., Newport, Mon.	1	0	0
Gray, R.	The Manor, Lechlade, Glos.	1	0	0
Greaves, R. M.	Wern, Portmadoc, North Wales	1	0	0
Green, A. W.	Stoke Abbey Farm, Stoke Bishop, Bristol	1	0	0
†Green, Major H. L.	The Hall, Poulton Lanulyn, Bromborough, Cheshire		..	
†Greenall, Mrs. C. E.	The Manor,, Carlton Scroop, Grantham		..	
†Greenall, Sir G., Bart.	Walton Hall, Warrington		..	
Greenway, W.	Halse, Taunton	1	0	0
Greenwell, Sir B., Bart.	Marden Park, Woldingham, Surrey	1	0	0
Greenwood, J. C.	Westfield Farm, Bloomfield Road, Bath	1	0	0
Gregory, W. & Co.	Wellington, Somerset	1	1	0
†Guest, Miss	Inwood, Templecombe		..	
*Guilford, Earl of	Waldershare Park, Dover	2	0	0
Guille, H. C. de Stevens	Westleigh House, Westleigh, near Bideford, N. Devon	1	0	0
Gullick, W. F., F.R.H.S.	Waterloo Nursery, Salisbury	1	0	0
Gunther, C. E.	Tongswood, Hawkhurst, Kent	1	0	0
Hall, R. G.	Ferry House, Bere, Alston	1	0	0
*Hambledon, Viscount	Greenlands, Henley-on-Thames	5	0	0
Hambro, H. C.	The Lodge, Tadworth, Surrey	1	0	0
Hamilton, Capt. C. E.	Weston, Newark-on-Trent	1	0	0
Hancock, H. C.	The Court, Milverton, Taunton	1	0	0
Hancock, Mrs. R. D.	Halse, Taunton	1	0	0
Handcock & Stinchcomb	69, Queen Square, Bristol	1	0	0
Harbottle, E. H.	Topsham, Devon	1	0	0
Harding, E. G.	Foxcote, Grittleton, Chippenham	1	0	0
Harditch, J. A.	Shipway Gate Farm, Portbury, Bristol	1	0	0
Hardwick, A.	Easton-in-Gordano, Bristol	1	0	0
Hare, Lady K. F.	Brokenhurst Park, Hants	1	0	0
Harmsworth, V. G.	Valley Holme, Horsted Keynes, Sussex	1	0	0
Harris, H.	Singleton Park Farm, Sketty, S.O., Glam.	1	0	0
Harris, J.	Wistland Road, Kentisbury, North Devon	1	0	0

Name.	Residence.	Subscriptions		
		£	s.	d.
Harrison, D.	The Grove, Tenby	1	0	0
Harrison, McGregor & Co.	Leigh, Lancashire	1	0	0
Harrison, T. D.	Albion Iron Works, Leigh, Lancs.	1	0	0
Harrop, Capt. W. M.	Gwersyllt Hill, Wrexham	1	0	0
Hart, A.	"Risingholme," Heathfield Tower, Sussex	1	0	0
Hartley, Major H. B.	Tytherington, Heytesbury, Wilts.	1	0	0
Haward, T. W.	Grove House, West Derby, Liverpool	1	1	0
Hawker, Capt. H. G.	Strode, Ermington, Ivybridge	1	0	0
Hawkins, A. W. Bailey	Stagenhoe Park, Welwyn, Herts.	1	0	0
†Haydon, Lt.-Col. W. H.	Maidford, Malmesbury, Wilts		..	
Hayes-Sadler, Mrs. A. F.	Little Hallingbury Park, Bishop's Stortford, Essex	1	0	0
Hayes, F. J.	West Pennard, Glastonbury	1	0	0
Hayward, Mrs. Victor	Bookham Grove, Bookham, Surrey	1	0	0
Heathcoat-Amory, Sir I. M., Bart.	Hensleigh, Tiverton, Devon	1	0	0
Helyar, Comm. K. C., D.S.O.	Poundesford, Taunton	1	0	0
*†Henderson, Lieut.-Col. Hon. H. G.	Buscot Park, Faringdon, Berks.		..	
Henderson, P.C. (Ld.)	West Bank Works, Barking,London	1	0	0
Heneage-Vivian,Rear Admiral Walter	Parc le Breos, Penmaen, Glam.	1	0	0
Henry, Lt.-Col. F.	Elmstree, Tetbury	1	0	0
Heppel, E. M.	Camerton, near Bath	1	1	0
Heseltine, Lt.-Col. J. E. N.	Hawking Down Farm, Hindon, Salisbury	1	0	0
Hesse, F. W.	Weston Hill, Weston Park, Bath	1	0	0
†Hewitt, G. Southy	Day, Son & Hewitt, 22, Dorset Street, London, W.1		..	
*Hewthorn & Co.	7, Lambs Passage, Chiswell Street, London, E.C.1	2	0	0
Hicks-Beach, Lady Susan	Coln S. Aldwyn, Fairford, Glos.	1	0	0
Higgins, B.	Millhouse Farm, Evercreech	0	10	0
Higgins, W. A.	11, York Street, Swansea	1	0	0
Hignett, G.	Hodshill, Southstoke, Bath	1	1	0
Hignett, Mrs. G.	Hodshill, Southstoke, Bath	1	1	0
†Hill, B. H.	Uphill, Weston-super-Mare		..	
Hill, H.	Paulton, near Bristol	1	1	0
Hill, C. L.	Harptree Court, East Harptree, near Bristol	1	0	0
Hill, H. W.	High Street, Newmarket	1	0	0
Hill, S.	Langford House, Churchill, Bristol	1	0	0
Hill, Major V. T.	Woodspring Priory, near Weston-super-Mare	1	1	0
Hill, Mrs. V. T.	Woodspring Priory, near Weston-super-Mare	1	1	0
†Hinckes, Captain R. T.	Mansel Court, Mansel Lacey, Hereford		..	
Hippisley & Sons	Wells, Somerset	1	0	0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Hippisley, R. J. B.	Ston Easton Park, Bath	1	0	0
Hiscock, Victor	France Farm, Blandford	1	1	0
†Hoare, Sir H. H. A., Bart	Stourhead, Zeals, S.O., Wilts	..		
Hobhouse, A. L.	Hadspen House, Castle Cary, Somt.	1	0	0
†Hobhouse, R. A.	Pondmead, Oakhill, Somerset	..		
*Hobhouse, Rt.-Hon. H.	Hadspen House, Castle Cary	2	0	0
†Hoddinot, S.	Dean Vale, West Cranmore, Shepton Mallet	..		
Hodgson, W. F. S.	Morebath, Bampton, Devon	1	1	0
Holford, Mrs. Gwynne	..	1	0	0
Holland, J. H.	Peene House, Newington, Shorncliffe Camp, Kent	1	0	0
Holmes, Mrs. F. J.	Amberfield House, Slinfold	1	0	0
Holmes, J. V.	Penyfai, Llanelly, Carmarthenshire	1	1	0
Holt Needham, O. N.	..	1	0	0
†Holt, Thomas G.	North Dean House, Hughenden, Bucks	..		
Hood, Capt. A. O.	Buckhill House, Calne	1	0	0
Hooley, Terah F.	Dry Drayton, Cambridge	1	0	0
Hooper, Bros.	Newburgh, Winfrith, Dorchester	1	0	0
†Horner, Sir J. F. Fortescue	Mells Park, Frome	..		
Hort, J. F.	Hallen, Henbury, nr. Bristol	1	0	0
Horton-Starkie, Rev. Preb. Le G. G.	Wellow Vicarage, Bath	1	1	0
Hosegood, A. W.	Williton, Taunton	1	0	0
Hosking, W. L.	Fentengollan, Probus, Cornwall	1	0	0
Hoskyns, H. W. W.	The Manor, North Perrott, Crewkerne	1	0	0
Hotson, H. S. (Wolseley Sheep Shearing Mach. Co. (Ld.)	Alma Street, Birmingham	1	0	0
Howard, A. H. S.	Thornbury Castle, Gloucester	1	0	0
Howard, J. & F.	Bedford	1	0	0
Howard, Mrs. R.	New Copse, Medstead, Hants	1	0	0
†Hughes, A. E.	The Laurels, Bargates, Leominster	..		
Hubble, W. L.	Cratloe, Faversham	1	0	0
Humphrey, L. J.	Sardinia House, Kingsway, London, W.C.2	1	0	0
Humphries, Sir Sidney, J.P.	Eastfield Lodge, Westbury-on-Trym, Bristol	1	1	0
Hunloke, Mrs. P.	Cowbridge, Malmesbury, Wilts	1	0	0
Huntingdon, Major A. W.	Wellesbourne House, Warwick	1	0	0
†Hurle, J. C.	Kilve Court, Bridgwater	..		
Hurle, Major J. A. Cooke	Yarlington House, Wincanton	1	1	0
Hurst & Son	152, Houndsditch, London, E.1	1	0	0
*Hussey, A. H.	Maincombe, Crewkerne	2	0	0
Hussey, T.	Manor Farm, Coxley, Wells	1	0	0
Hussey, Captain H.	Maincombe, Crewkerne	1	0	0
Huxtable, J. & Co.	Alexandra Works, Barnstaple	1	0	0
†Hylton, Lord	Charlton, near Radstock	..		

Name.	Residence.	Subscriptions. £	s.	d.
*Ilchester, Earl of	Melbury, Dorchester	2	2	0
Iles, D.	Lyegrove, Badminton	1	0	0
Imbert-Terry, F. B.	Blue Hayes, Broadclyst, Devon	1	0	0
Imbert-Terry, Mrs. L.	Blue Hayes, Broadclyst, Devon	1	0	0
Imperial Live Stock Insurance Co.	27, Cavendish Sq., London, W.1	1	0	0
International Harvester Co. (Ld.)	80, Finsbury Pavement, London, E.C.	1	0	0
*Ismay, J. H.	Iwerne Minster, Blandford, Dorset	2	0	0
Jackman, Percy	Pulteney Hotel, Bath	1	0	0
Jackson, Sir Henry Mather	Llantillo Court, Abergavenny	1	0	0
James, A.	Totterdown, Bristol	1	0	0
James, Mark	Home Farm, Ston Easton, Bath	1	0	0
James, W.	10, Portland Street, Swansea	1	1	0
Jarmain, T. M.	Haseley Iron Works, Tetsworth	1	1	0
Jefferies, Evan	Glebe Farm, Windrush, Burford, Oxon	1	0	0
Jenkins, D.	Boverton Place, Llantwit Major, Glam.	1	0	0
Jenkins, E.	c/o F. Capern, Lewin's Mead, Bristol	1	0	0
Jenkins, T. E.	Kilvrough Home Farm, Park Mill, S.O., Glamorgan	1	0	0
Jenkins, Captain Vaughan	St. Winifreds, Combe Down, Bath	1	0	0
Jenkins, W. A.	Tuxeds, Eaton Grove, Swansea	1	0	0
Jenks, Shirley H.	Elmore, Thorncombe, near Chard	1	1	0
†Jervoise, Mrs. B. A. L.	Herriard Park, Basingstoke		..	
Jervoise, Major F. H. T.	Herriard Park, Basingstoke	1	1	0
Jewell, Mrs. Eva	Henden Manor, Ide Hill, Sevenoaks, Kent	1	1	0
Jeyes' Sanitary Compounds Company	Cannon Street, London, E.C.4	1	0	0
John, T. D.	The Hollies, Lisvane, Glam.	1	0	0
John, E. & Sons	High Street, Cowbridge, Glam.	1	0	0
John, W. Llewellyn	Penmount, Llanelly, Carm.	1	1	0
Johns, W. B.	Clinton Estate Office, Dolton, N. Devon	1	1	0
Johnson, L. O.	Peppers, Ashurst, Steyning, Sussex	1	0	0
Johnstone, F. E.	Small Hythe, Tenterden, Kent	1	0	0
Johnstone, G. H.	Trewithen, Grampound Road, Cornwall	1	0	0
Jones, E.	Penybont Farm, Sennybridge, Brecon	1	0	0
†Jones, H. G.	Downford, Mayfield, Sussex		..	
Jones, K. S.	Norton House, West Cross, Swansea	1	0	0
Jones, T. S.	Frondez, Radyr, Cardiff	1	0	0
Jones & Son	Tolbury Mills, Bruton	1	1	0
Joyce, J.	Preston, Milverton, Somerset	1	0	0
Joyce, Rev. W. W.	Charles Parsonage, South Molton	1	0	0

Name	Residence	Sub-scriptions		
		£	s.	d.
Keen, R.	Firland Farm, Westbury-sub-Mendip, Wells	1	0	0
Kekewich, Sir T. H., Bart.	Peamore, Exeter	1	0	0
Kell & Co.	Gloucester	1	0	0
Kelway, W.	Huish Episcopi, Langport	1	1	0
Kemble, Miss M. I.	Wraxall Manor, Dorchester	1	1	0
†Kemp, L. J.	Maer, Exmouth		..	
Kendall, W. G.	Yarner, Darlington, Totnes, S. Devon	1	0	0
Kennaway, Sir J., Bart.	Escot, Ottery St. Mary	1	0	0
Kenward, E.	Axford Lodge, near Basingstoke	1	0	0
Kenyon-Slaney, Major, M.P.	Bridestow, Devon	1	0	0
Kerry Estates (Ld.)	Estate Office, Warren House, Stanmore, Middlesex	1	0	0
*Keyser, C. E.	Aldermaston Court, Reading	2	0	0
Kidner, S., O.B.E.	Bickley, Milverton, near Taunton	1	0	0
Kidston, G.	Hazlebury, Box, Wilts	1	0	0
Killen, C. J.	Middle Farm, West Horrington, Wells	1	0	0
Killen, J. J.	Rood Farm, Butleigh, Glastonbury	1	0	0
Killen, R. H.	Manor Farm, Farrington Gurney, Bristol	1	0	0
King, Mrs. A. C.	Braishfield Pony Stud, Romsey, Hants	1	0	0
King, E. W.	Chew Magna, near Bristol	1	0	0
King & Sons, R.	Milsom Street, Bath	1	1	0
Kingsclere Farms and Stud (L. A. Ormrod)	Kingsclere, Hants	1	1	0
Kingwell, H. J.	Bow Grange, Totnes	1	0	0
Knight-Bruce, R.	The Sanctuary, Shobrooke, Crediton	1	0	0
Knight, S. J.	Buckingham Lodge, Keynsham, Bristol	1	0	0
†Knollys, C. R.	Richmond Lodge, Richmond Hill, Bath		..	
Knox, E.	Richmond Grove, Bath	1	1	0
†Kruse, W.	St. Blazey, Par Station, Cornwall		..	
†Lake, C.	Glenthorne, Gravesend		..	
Lake, H.	Combe Lancey, Crediton, Devon	1	0	0
Lander, J.	Lydney Park, Gloucester	1	1	0
Langford, E. W. (Ld.)	Hereford	1	0	0
*Lansdowne, Marquis of	Bowood, Calne	2	0	0
Lawes, Algernon (Ld.)	203, Hornsey Road, London, N.7.	1	1	0
Lawrence, Lt.-Col. the Hon. G.	Hill Farm, Oaksey, Wilts	1	0	0
Lawrence, R.	Rull, Cullompton, Devon	1	0	0
Lawton, W.	Kindatt, Penn Lea Road, Bath	1	0	0
Leeder, E. H.	Mount Pleasant House, Swansea	1	0	0
*Leney, A.	Salts Place, Loose, Kent	2	0	0
Leverton, W. A.	Columb John Farm, Stoke Canon, Exeter	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Levy, Mrs. E. K.	The Old Vicarage, Chipping Sodbury, Glos.	1	0	0
Levy, Sir Maurice, Bart., J.P.	Great Glen House, Great Glen, Leicester	1	1	0
Lewis, Miss E.	Ffrwdydrain, Llandilo	1	0	0
Lewis, Wm. & Son (Ld.)	*Herald* Office, Bath	1	0	0
Lewisham, Lord	Godmersham Park, Canterbury	1	0	0
†Ley, John Henry	Trehill, Exeter		..	
Liddell, Capt. C. O.	Shire Newton Hall, Chepstow	1	1	0
Lindley, Hon. Walter Barry	Corpe House, Taunton	1	0	0
Lindley, Hon. Mrs. Walter	Corpe House, Taunton	1	0	0
Lipscomb, Godfrey	Claverton Lodge, Bathwick Hill, Bath	1	0	0
Lister, R. A. & Co. (Ld.)	Dursley, Glos.	1	1	0
†Lister, J. J.	Falkland House, Lewes		..	
Littleton, W. J.	Holland Barton, Bodmin, Cornwall	1	0	0
Llewellyn, Capt. Llewellyn T. E.	Hackwood, Basingstoke	1	0	0
Llewellyn, Griffiths R. P.	Combend, Elkestone, Colesborne, S.O.	1	0	0
*Llewelyn, Sir J. T. D., Bart.	Penllergaer, Swansea	2	2	0
Long, Col. William	Newton House, Clevedon, Somerset	1	0	0
Long, W. F.	Broadway House, Chilcompton, near Bath	1	0	0
Longrigg, G. E.	Weston Lea, Bath	1	0	0
Lopes, Sir H. Y. Buller, Bart.	Maristow, Roborough, Devon	1	0	0
Lord Wandsworth Agricultural College	Long Sutton, Winchfield, Hants	1	1	0
Loxton, A. H.	Croft Farm, Westbury-sub-Mendip, Wells	1	0	0
Luckes, S.	Bridge Street, Taunton	1	1	0
Luckock, E. H. M.	Sidbrook House, Taunton	1	0	0
Ludlow, Lady	Luton Hoo, Luton	1	0	0
*Luff, J. Purnell	The Towers, Evercreech, Bath	2	2	0
Lupton, Miss A.	Chalmington, Dorchester	1	1	0
†Lupton, N. D.	Chalmington, Cattistock, Dorset		..	
†Lutley, J. H.	Brockhampton, Worcester		..	
Luttrell, Major A. C.	Lea Combe House, Axminster	1	1	0
Luttrell, Capt. A. F.	Court House, East Quantoxhead, Bridgwater	1	0	0
Luttrell, Claude M. F.	Ben Mead, Box, Wilts	1	1	0
Luttrell, G.	Dunster Castle, Somerset	1	1	0
*Lymington, Viscount	Old Manor Farm, Ellisfield, Basingstoke	2	0	0
*Lysaght, G. L.	Chapel Cleeve, Taunton	2	0	0
MacAndrew, E. G.	Pallinghurst, Baynards, Horsham	1	0	0
Macdonald, H. L. S.	Avondale, Bathford, Bath	1	0	0
Macintosh, J.,	The University College, Reading	1	0	0
Maconochie, A. W.	8, Porchester Gate, London, W.2	1	0	0
Magor R.	Springfield Lyons, Chelmsford	1	0	0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Magor, Mrs. R.	Springfield Lyons, Chelmsford	1	0	0
Maitland, A.	Thornleigh, Vicars Cross, near Chester	1	0	0
Major, H. J. & C. (Ld.)	Bridgwater	1	0	0
Malet, Col. Sir Harry	Wilbury, Newton Tony, Salisbury	1	0	0
†Mansell, A. E.	Mount Vernon, Melton Mowbray, Tasmania	..		
Mansfield, T.	Winterbourne Court, Winterbourne Bristol	1	1	0
Mapstone, R. G.	Glastonbury	1	0	0
Marfell, R. H.	Great House Farm, Llangeview, Usk	1	1	0
Marshall, H. C., C.C.	Wrington, Somerset	1	0	0
Marshall, L. H.	Chippenham	1	0	0
Marshall, Sons & Co. (Ld.)	Britannia Iron Works Gainsborough	1	0	0
Martin, Col.	Bishops Caundle, Sherborne	1	0	0
Martin, Mrs.	Bishops Caundle, Sherborne	1	0	0
Martin, J.	Thorverton, S.R.O., Devon	1	0	0
Martin, T. L.	Ashe Warren, near Basingstoke	1	0	0
Martin, W. P.	Colleton, near Chulmleigh	1	0	0
Martineau, H. M.	The Lodge, Holyport, Berks	1	0	0
Martyn, G.	Tremeddan, Liskeard, Cornwall	1	1	0
Mason, F. F.	Swansea	1	0	0
Massey-Harris Co. (Ld.), (G. W. Dawkins, General Manager)	54 & 55, Bunhill Row, London, E.C.1	1	0	0
Masters, A.	Kyneton, Thornbury, Glos.	1	0	0
Mathews, Ernest	Elmodesham House, Amersham, Bucks	1	0	0
Matthews, H.	Winterbourne, Bristol	1	0	0
Maunder, J.	Kingweston, Somerton	1	0	0
Maunder, L. T.	Butleigh, Glastonbury	1	0	0
Mawby, T.	Merryweather & Co., Greenwich, London	1	0	0
May, E. Howard, c/o May and Hassell (Ld.)	Baltic Wharf, Bristol	1	0	0
Meddick, William G.	Fairfield Arms, Fairfield Park, Bath	1	0	0
Membery, R.	37, Southgate Street, Bath	1	0	0
Merry, Richard	Goulds, Broadclyst, Exeter	0	10	0
Merryweather & Sons, (Ld.)	Greenwich Road, London, S.E.10	1	1	0
Merson, T. H.	Faringdon, N. Petherton, Bridgwater	1	0	0
*Methuen, General Lord, C.B., C.M.G.	Corsham Court, Wilts.	2	0	0
*Methuen, Hon. Paul	Beanacre Manor, Melksham	2	0	0
Meyrick, Sir G. A. E. T., Bart	Hinton Admiral, Christchurch, Hants	1	1	0
*Mildmay, Lord of Flete	Flete, Ivybridge, S. Devon	2	2	0
Mildmay, Major G. St. John	Queen Camel, Somerset	1	1	0
†Mildred, G. B.	..	..		
†Miles, Lieut.-Col. Sir Charles W., Bart.	The Manor House, Walton-in-Gordano, Clevedon	..		

Name	Recidence	Sub-scriptions £	s.	d.
Miles, H.	Auctioneer, Farringdon Gurney, Bristol	1	0	0
Millard, A. A.	Pearash Farm, Penselwood, Bourton, Dorset	1	1	0
Millard, F. J.	Bridge Farm, Butleigh,Glastonbury	1	0	0
Miller-Hallett, A.	Goddington, Chelsfield, Kent	1	1	0
Mills, B. W.	31, Cambridge Place, Paddington, London, W.	1	0	0
Mitchell, Major A. B.	Hill End, Henbury, near Bristol	1	0	0
Mitchell, Major F. A.	Doughton House, Tetbury, Glos.	1	0	0
Mitchell, Capt. H. G.	Tiptoe Lodge, Hordle, Hants	1	0	0
Molassine Co. (Ld.)	East Greenwich, London, S.E.	1	0	0
Mond, Sir Alfred,Bart.,M.P.	Melchet Court, Romsey	1	0	0
Moody, C.	Maisemoor, Evercreech	1	0	0
Moody, G. W.	Stapleton, Martock, Somerset	1	0	0
Moore, G.	Folly Farm, Polsham, Wells	1	0	0
†Moore, H. F.	Renee House, 48, Dulwich Road, Herne Hill, S.E. 24		..	
Moore, M. H.	The Hellyers, Ipplepen, Newton Abbot	1	1	0
†Moore-Stevens, J. R. C.	Woodhayes, Whimple, Devon		..	
Moore-Stevens, Col. R. A.	Bellenden, Exeter	1	0	0
Morcom, Mrs. F. I.	Clock House, Bromsgrove	1	0	0
Morgan, Bros.	Henlade Farm, Taunton	1	0	0
Morgan, Major L. H. C.	Woolcombe, Wellington, Somerset	1	0	0
Morland, J. C.	The Orchard, Street, Somerset	1	0	0
*Morley, Earl of	Saltram, Plympton, Devon	2	0	0
*Morris, C.	Highfield Hall, St. Albans	2	0	0
Morris, C.	East Lydeard Farm, Bishop's Lydeard, Taunton	1	0	0
Morris, Capt. T. R.	Sketty Park, Sketty, R.S.O., Glam.	1	0	0
Morris & Griffin (Ld.)	Maindee, Newport, Mon.	1	1	0
Morris, Sir R. A., Bart.	Sketty Park, Swansea	1	0	0
Morris, Son & Peard	Auctioneers, North Curry, Taunton	1	0	0
Morrison-Bell, Col. E. F.	The Close, Tetbury, Glos.	1	0	0
*†Morrison, Hugh, M.P.	Fonthill House, Tisbury, Wilts		..	
Morrison, Major J. A., D.S.O.	Berwick House, Hindon, Salisbury	1	0	0
†Morrison, J. A.	Basildon Park, Reading		..	
Mortimer, Capt. A. E.	Wall's Court, Stoke Gifford, near Bristol	1	0	0
Mortimer, Major M. W.	Longleat Estate Office, Warminster	1	1	0
Mountain, H. S.	Groombridge Place, Kent	1	0	0
Mount-Edgcumbe, Earl of	Mount Edgcumbe, Devonport	1	1	0
*Munn, F. S.	Dumballs Road, Cardiff	2	0	0
Muntz, Mrs. J. O.	Foxhams, Horrabridge, S. Devon	1	0	0
Murch, J.	Charlton Mackrell	1	0	0
Murray Smith, Hon. Mrs.	Gumley Hall, Market Harborough	1	0	0
Nagle, J.	Amesbury, Wilts	1	1	0
Napier, H. B.	Ashton Court Estate Office, Long Ashton, Bristol	1	1	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Napier, Capt. W. E.	Upton House, nr. Sandwich, Kent	1	0	0
Naumann, C. C.	Crossways, Baynards, Horsham	1	0	0
Naumann, J. H.	Crossways, Baynards, Horsham	1	0	0
Neagle, D. T.	London, Gloucester and N. Hants Dairy Co. (Ld.), 25, Whatley Road, Clifton, Bristol	1	0	0
Neal, W. H.	Yealmpstone Farm, Plympton	1	1	0
Neeld, Sir A. D., Bart., C.B.	Grittleton, Chippenham	1	0	0
Nelder, C. W.	Carnarvon Arms, Dulverton, Somerset	0	10	0
Neville, Mrs. M. H.	Copthorne Farm, near Crawley, Sussex	1	0	0
†Nevill, Lieut.-Commander Ralph, R.N.	Butleigh, Glastonbury	..		
†Neville-Grenville, Robert	Butleigh Court, Glastonbury	..		
New, H. G.	Craddock, Cullompton, Devon	1	0	0
Newington, C.	Oakover, Ticehurst, Sussex	1	0	0
Newman, Sir R. H. S., Bart., D.L., M.P.	Mamhead Park, near Exeter	1	1	0
Nicholetts, E. C.	The Lons, Bitton, Gloucestershire	1	0	0
Nichols, G.	Demarara House, Colston Avenue, Bristol	1	0	0
Nicholson, R, F,	Woodcott. Whitchurch, Hants	1	0	0
Nicholls, A. W.	Lorna Doone, Rustic Works, Barnstaple	1	0	0
Nix, J. A.	Tilgate, Crawley, Sussex	1	1	0
Nixon, W.	The Cottage, Offchurch, Leamington	1	0	0
*Normanton, Earl of	Somerley, Ringwood	2	0	0
Northey, G., J.P.	Cheney Court, Box, Wilts	1	0	0
*Northumberland, Duke of	Albury Park, Guildford	2	0	0
Nurse, F. G.	Wick Farm, Coxley, Wells	1	0	0
Nuthall, S.	Runtley Farm, Sutton Green, near Guildford	1	0	0
Nutt, Mrs. H. J.	Hampton House, Hampton-in-Arden, Warwick	1	0	0
†O'Hagan, Lord	Pygro Park, Havering, Atte Bower, Romford, Essex	..		
O'Halloran, Miss P.	Fairwood Lodge, Killay, Glam.	1	0	0
Onslow, Countess of	Clandon Park, near Guildford	1	0	0
Orde Powlett, Hon. N. A.	Bolton Hall, Leyburn, Yorks.	1	0	0
*†Oppenheimer, Sir B., Bart.	..	..		
Osmond & Son	Grimsby	1	0	0
Paddison, W. P.	Research Department, Royal Arsenal, Woolwich, London, S.E. 18	1	0	0
Paget, L. C.	Middlethorpe Hall, Yorks.	1	0	0
*Paget, Sir Richard, Bart.	74, Strand, London, S.W.1.	2	0	0
Palmer, W. H.	York Buildings, Bridgwater	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Palmer, Mrs. W. Howard	Heathlands, Wokingham, Berks	1	0	0
Palmer, Brig.-Gen. G., Ll.C.B.	Berryfield, Bradford-on-Avon, Wilts	1	0	0
Palmer, Major W. L., M.C.	Godmersham Park, Canterbury	1	0	0
†Parker, Hon. Cecil T.	The Grove, Corsham, Wilts		..	
*†Parker, F. J.	Plymouth Street, Swansea		..	
Parker, L. M.	14, Sketty Road, Swansea	1	0	0
*Parry, J. E.	Talybryn, Bwlch, S.O., Breconshire	2	2	0
Parry, J. M. & Co.	Leominster, Hereford	1	0	0
Parry-Okeden, Lieut.-Col. U. E. P.	Turnworth, Blandford	1	0	0
Parsons, F. J.	Venn Barton Stud Farm, Beaworthy, N. Devon	1	0	0
†Parsons, J. D. Toogood	Grasmere, East Hoathley, Sussex		..	
†Parsons, R. M. P.	Misterton, Crewkerne		..	
Parsons, F. W.	Speckington, Ilchester	1	0	0
Partridge, A. A.	Mordref, Plympton, Devon	1	0	0
Pass, Captain A. D.	Manor House, Wootton Fitzpaine, Charmouth, Dorset	1	0	0
Patey, Rev. C. R.	Stowford House, Ivybridge	1	1	0
Pawlyn, J. H. W.	Messrs. Ransomes, Sims & Jefferies (Ld.), Orwell Works, Ipswich	1	0	0
Peacock, Miss C. T.	Hellings, Wiveliscombe, Somerset	1	0	0
Peacock, Sir W.	3, Buckingham Gate, London	1	1	0
Pearce, C. E.	Sea Mills Farm, near Bristol	1	0	0
Pearce, E.	Parsonage Farm, Long Ashton, Bristol	1	0	0
Pearce, J.	Parsonage Farm, Long Ashton, Bristol	1	0	0
Pearce, T. H.	Parsonage Farm, Long Ashton, Bristol	1	0	0
Peel, Major E. Morton	St. Leonards, Langland, near Swansea	1	0	0
Peel, Viscount	52, Grosvenor Street, London, W.	1	1	0
Pelly, H. C.	Kentwins, Nutfield, Surrey	1	0	0
Penberthy, Professor J.	Dean Hall, Newnham, Glos.	1	0	0
*Pender, Major H. Denison, D.S.O.	Strangways, Marnhull, Dorset	2	0	0
Pendarves, W. Cole	Pendarves, Camborne, Cornwall	1	1	0
Penson, F.	Taston, Charlbury, Oxon.	1	0	0
Pepper, W. F.	New Redlynch Farm, Bruton	1	0	0
Perfect Patents Company	195, High Street, Brentford, Middlesex	1	0	0
Perkins, Col. E. K., M.P.	31, Winn Road, Southampton	1	1	0
Perkins, F. H. S.	Wye Croft, Monmouth	1	0	0
Petherick, R., jun.	Acland Barton, Landkey, Barnstaple	0	10	0
Petters (Ld.)	Yeovil	1	0	0
Pettifer, T. & Co.	Eydon, Banbury	1	0	0
Peyton, E. P.	Woodcote Lodge, Kenilworth	1	0	0
Phillips, Sir L. R.		1	1	0
Phipps, C. B. H.	Chalcot, Westbury, Wilts	1	0	0
Phipps, Hornby, Capt.	Hornblossom House, Alford, Som.	1	0	0

Name	Residence	Subscriptions		
		£	s.	d.
Piggott Brothers & Co.	220, 222, 224, Bishopsgate Street Without, London, E.C.	1	0	0
Pike, C. A.	Chilean Nitrate Committee, Friar's House, 39-41, New Broad Street, London, E.C.2.	1	0	0
Pinkstone, C. G. (Pinkstone (Ld.)	24, Church St., Temple, Bristol	1	1	0
†Pinney, R. W. P.	Somerton, Somerset		..	
Pitt, W.	The Albynes, Bridgnorth	1	1	0
*Plymouth, Earl of	Hewell Grange, Bromsgrove	4	0	0
*Poltimore, Lord	Court Hall, North Molton, Devon	2	2	0
Poole, Mrs. A. R.	King's Hill, Dursley	1	1	0
Poore, Capt. J.	Estate Office, Badminton, Glos.	1	1	0
Pope, Alfred	Dorchester	1	0	0
Pope, A.	Henstill, Sanford, Crediton	1	0	0
Pope, John	Nowers, Wellington, Somerset	1	0	0
Popert, Capt. A. H.	Forestry School, Parkend, Glos.	1	0	0
Popham, H. L.	Hunstrete House, Pensford, Bristol	1	0	0
Popham, Mrs. H. L.	Hunstrete House, Pensford, Bristol	1	0	0
Porter, F. H.	Greenway Park, Chippenham	1	0	0
Porter, W. J. H.	Glendale Farm, Wedmore	1	0	0
†Portman, Viscount	Buxted Park, Uckfield, Sussex		..	
Portsmouth, Earl of	Barton House, Morchard Bishop, Devon	1	0	0
Powell, G. F.	10, Beaufort West, Bath	1	0	0
Powlett, A. T.	42, Milsom Street, Bath	1	0	0
Preston-Jones, A.	Mickleover House, near Derby	1	0	0
†Price, Sir Francis, Bart.	Hensol Castle, Pontyclun, Glamorgan		..	
Price, J. H.	Higher Hill Farm, Butleigh, Glastonbury	1	0	0
Price, Owen	Nantyrharn, Cray, Brecon	1	0	0
Price, W. S.	Nantymadog, Cray, Brecon	1	0	0
Prichard, H. L.	Penmaen, R.S.O., Glam.	1	0	0
Pritchard, E.	Wood Hill Park, Wootton Bassett, Wilts	1	0	0
Pritchard, W. A.	Brentmoor, Brent, South Devon	1	0	0
Proctor, H. & T. (Ld.)	Cathay, Bristol	1	1	0
Proudfoot, W.	Tor Gate, Princetown, Devon	1	0	0
Pullen, J. W.	Compton Greenfield, Bristol	1	0	0
†Purgold, A. D.	.. ..		..	
Pursey, C. E.	Bailey's Court, Stoke Gifford, near Bristol	1	0	0
Pyke, C. C.	Capel Leyse, Holmwood, Surrey	1	1	0
Pyke Nott, E. G. I.	Haines Hill, Taunton	1	0	0
*Pyman, Sydney	Pigeon House, Ross-on-Wye	2	0	0
Quantock Vale Cider Co.	North Petherton, Bridgwater	1	0	0
Quested, J. E.	Cheriton, Kent	1	0	0
Quicke, Capt. L. A.	Newton House, Newton St. Cyres	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
Radcliffe, Wynham Ivor	Druidstone, near Cardiff	1	0	0
*†Radnor, Earl of	Longford Castle, Salisbury		..	
Rawlence, Ernest A.	St. Andrew's, Salisbury	1	1	0
Rawlence, G. Norman	Salisbury	1	0	0
†Rawlence, Major M., D.S.O., R.E.	c/o Lloyd's Bank, Cox's Branch, 16, Charing Cross, London, S.W.1	..		
Rea, F. H.	Kite's Nest Farm, near Wotton-under-Edge, Glos.	1	0	0
Readhead, R.	Great House, Hambledon, Godalming	1	0	0
Rees-Stokes, C. W.	Warwick House, Tenby	1	0	0
Reeves, Robert and John, and Son	Bratton Iron Works, Westbury, Wilts	1	0	0
Rennie, J. H.	Porthycarne, Usk, Mon.	1	0	0
Reynolds, Sylvanus		1	0	0
Richardson, Capt. A.	Seven Springs, Cheltenham	1	0	0
Riley, J. L. & A.	The Iwerne, near Ledbury	1	0	0
Roach, W.	Trewidden, Buryas Bridge, Cornwall	1	0	0
Roberts, C. M.	9a, York Street, Bath	1	0	0
Roberts, D., M.I.M.E. (J. Coultas, Ld.)	" Beaconfield," Grantham	1	0	0
Robins, O. T. and A. F.	Lidcott Hall, High Bray, South Molton	1	0	0
Robinson, E. S. & A. (Ld.)	Redcliffe Street, Bristol	1	1	0
Robinson, John & Co.	Bristol	1	1	0
Rogerson, R. W. (Ward & Co., Seedsmen)	Northgate Street, Bath	1	0	0
Rolleston, S. V.	15, Brock Street, Bath	1	0	0
Rooksby, A.	Litchard Hall, Bridgend	1	0	0
Roper, Geoffrey D.	Forde Abbey, Chard	1	0	0
Roundway, Lord	Roundway Park, Devizes	1	0	0
Roundway, Lady	Roundway Park, Devizes	1	0	0
Rouse-Boughton, Sir W. St. A., Bart.	Downton Hall, Ludlow	1	0	0
Rouse-Boughton, Lady	Downton Hall, Ludlow	1	0	0
Rowcliffe, E. L.	Stovolds Hill, Cranleigh, Surrey	1	1	0
Rowcliffe, H. S.	Knole Lodge, Langton Green, Tunbridge Wells	1	0	0
Rowland, P. S.	Fairy Hill, Reynoldston, Gower, Glam.	1	0	0
Rowcliffe, W. C.	Hillside, Bidborough, Kent	1	0	0
Royal Guernsey Agricultural and Horticultural Society	Guernsey	1	0	0
Rubeck, O. P.	" Valencia," Meath Green, Horley, Surrey	1	1	0
†*Rubin, Bernard	Halsted, Kent		..	
Russell, G.	North Hill Farm, Dundry, near Bristol	1	0	0
Russell-Smith, A.	North Houghton Manor, Stockbridge, Hants	1	0	0
Ruston & Hornsby (Ld.)	Grantham	1	0	0

Name.	Residence.	Sub-scriptions.		
		£	s.	d.
†St. Audries, Lord	St. Audries, Bridgwater	..		
St. John, Col. the Hon. Roland	Langford Budville, Wellington, Somerset	1	0	0
St. John of Bletsoe, Lord	Melchbourne Park, Beds.	1	0	0
†Salmon, H. C.	North Field, Bridgwater	..		
Sale, A. W.	The Gables, Rotherfield, Tunbridge Wells	1	0	0
Salter, Benjamin	Newlands, Broadclyst, Exeter	1	0	0
Salter, T.	Beare Farm, Broadclyst, Exeter	1	0	0
Samuelson, Ernest	Bodicote Grange, Banbury	1	1	0
Sanders, Lt.-Col. Right Hon. Sir R. A., Bart., M.P.	Bayford Lodge, Wincanton	1	0	0
Saunders, H. B. T.	Woodside Farm, Sparkford	1	0	0
Saunders and Biss	172, Sidwell Street, Exeter	1	0	0
Sawtell, G. H.	Kingweston, Taunton	1	0	0
Sayers, Messrs.	Groundwell Manor, Blunsdon, Swindon	1	0	0
†Scott, C. T.	..	..		
†Seaton, Lord	Buckland Abbey, Yelverton, Devon	..		
Senior and Godwin	Auctioneers, Sturminster Newton, Dorset	1	1	0
Shaw, Col. F. S. Kennedy, C.B.E.	Teffont Magna, Salisbury	1	1	0
Shaw, W. B. K.	Teffont Magna, Salisbury	1	0	0
†Shaw-Stewart, Walter R.	Hayes, Shaftesbury	..		
Sheldon, R. F.	West Street House, Wells	1	1	0
Shellabear, G. C.	Mounty Tavy, Tavistock	1	1	0
*Shelley, Sir John, Bart.	Shobrooke Park, Crediton	2	2	0
*Shelley, J. F.	Posbury House, near Crediton	2	2	0
Shelley, Mrs. J. F.	Posbury House, Crediton	1	0	0
Sheppard, G.	Eastfields House, Chepstow Road, Newport, Mon.	1	0	0
Sheppard, P. C. O.	Dunraven Estate Office, Bridgend, Glam.	1	1	0
Sheriff & Sons	Lemsford, Hatfield	1	0	0
†Sherston, C. J. T.	The Quarry, Amberley, Surrey	..		
†Sherston, T. P. D.	33, Fowler's Road, Salisbury	..		
*Sidmouth, Viscount	Upottery Manor, Honiton	2	0	0
Silcock, R. & Sons	Stanley Hall, Union Street, Liverpool	1	0	0
Simpson, J. Hope	Blagroves, Oake, Taunton	1	0	0
*Singer, W. M. G.	42, Charles Street, Berkeley Square, London, W.1.	2	0	0
Skidmore, Miss E.	Ashleigh Leigh, Box, Wilts	1	0	0
Skinner, Board & Co.	Exmoor Street, Bristol	1	0	0
Skinner, W. J.	The Laurels, Weare, Somerset	1	0	0
Smart, G. E.	Combe Hay Manor, Bath	1	1	0
Smith, A. Carlyle	Sutton Hall, Woodbridge, Suffolk	1	0	0
Smith, D.	Court Farm, Stoke Gifford, near Bristol	1	0	0
Smith, A. J. (Ld.)	9, Queen's Square, Bristol	1	0	0
Smith, H. C.	9, Union Terrace, Plymouth	1	0	0

Name	Residence	Subscriptions £	s.	d.
Smith, J.	Monkton, Hereford	1	0	0
†Smith, S. Lee			..	
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Entry Forms for Arab Horse Stud Book, Vol. III; and for Arab-bred Register for the produce of Stallions or Mares entered in Stud Book; and Application Forms for Membership will be sent by the Secretary, Rev. D. B. Montefiore, 15, Wyndham Street, Brighton.

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CATTLE.

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BREEDERS' DIRECTORY.

CATTLE—*continued.*

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BREEDERS' DIRECTORY.

CATTLE—*continued.*

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CATTLE—*continued.*

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Young Bulls for Sale, from this dual-purpose, prize-winning herd. H. G. Clarke, Forest View, Hinckley, Leicestershire.

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Fuller, Major Robert, Great Chalfield, Melksham. Flock Number 385, Oxford Down Sheep. Prizes 1925, Oxford, Bath & West and Royal Shows. Enquiries invited.

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SHEEP—*continued.*

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Suffolks.

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PIGS—*continued.*

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PIGS—*continued.*

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